DOMESTIC ENGINEERING

Whole No. 987. Vol. LVII. No. 6. 445-447 Plymouth Ct., Chicago. November 11, 1911

Urgent Need of Uniformity in Sanitary Regulations and Greater Breadth of Sanitary Supervision

When men's dwelling-houses were always several rods apart. When men's homes were separated by a half-mile of waving grain, or a young forest of fruit-trees. When each man built his home on rising ground, so that its sewage-waters were quickly drained into and absorbed by lower soil. When huge open fire-places continually vented the living rooms. When cheap and abundant land offered varied choice for construction-sites. When the population was largely disproportionate to the land-area. When all these conditions obtained, nature was the only health-officer, the only one needed, the only one working, the one that was scarcely even recognized.

We progress. The stage-coach disappeared. Steam and electric trains annulled distance, and brought about congested population-centers. There was a restriction of living-area, a closer type of construction, and the opportunity of selection of individual conditions offering advantages of drainage disappeared. All these, separately and in conjunction, were prime factors in the evolution of many sanitary codes of varying efficiency and differing degrees of comprehensiveness, and presenting in many cases striking disagreements. This was natural, for conditions differed in as many points as the minds of the men who evolved them.

Some of these codes were framed merely to cover some urgent local needs. Two or three of the ordinances would meet the need effectively, and the other parts of the code were grabbed bodily from some other code or codes and used as padding material to give the whole an air of solidarity, regardless of whether they would be applicable to future needs of the town or city or not.

Many more of the codes were carefully compiled from the codes referred to in the preceding paragraph, and repeated all their mistakes and added some original ones, confusion thus being many times confounded.

Other codes were framed by "health officers" in the form of city-hall doctors and building-department hangers-on under the direction of ward-bosses laying foundations for after-election jobs. None of these jobs by any chance fell into the hands of plumbers, for plumbers are kept too busy earning a livelihood to find time to hang around political thrones. Such codes as these have hampered sanitary efficiency in many towns, and even when modified by the call for help of master plumbers in times of emergency, are still barriers to progress because of the false foundations upon which they were built.

Some codes, excellent ones in their main features, were designed by master plumbers. They are practical in conception as regards the points with which the town or city is concerned, but they have been found defective because of their restrictions, due to concessions to journeymen prejudices and local influences. Most of these concessions, by the way, were by omission. **It is possible to frame an ordinance so that it is effective as long as everybody feels good, and absolutely inoperative if a walking-delegate has a pain in his rake-off.**

Then there are real codes, drawn up by the conjunctive efforts of broad-minded plumbers, live journeymen, far-seeing health-officers, and advanced sanitary engineers, in practice as well as in name. **These codes are as yet limited in number, but they are steadily increasing.** Their only weakness lies in the fact that they have been evolved separately. There has been but little concerted effort to secure practical uniformity in the ordinances, their similarity in many cases showing the possibility of general uniformity, and their general disagreement being due to the lack of comprehensive consideration.

Even these real codes may have their influences impaired by some contradiction or omission in a state code, and a state code may be weakened in its complete enforcement by a disagreeing city code.

Nobody is to blame for these conditions. The trade has been steadily working out its own salva-

tion, and the conditions here noted are common in the evolution of every trade, every industry, every city, every state, and every country. There must come a time, however, when people wake up and find out that the evolutionary process has reached a stage where general uniformity is possible. **That time is now in the plumbing industry.** We have grown big enough and strong enough, if we will, to bring about a general uniformity in our sanitary regulations, which shall be enforced nationally and which will extend throughout the country in its enforcement of sanitary living conditions everywhere.

That it has not been done before is due to lack of co-operation between the different industries involved. **There have been too many individual stars and too little team-work.** Individual stars make good photographs for the local newspapers, but it's team-work that wins the pennant.

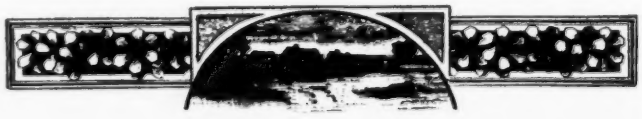
We have city associations, state associations, and the National Association of Master Plumbers, and kindred associations of manufacturers, jobbers, plumbing inspectors, sanitary engineers and journeymen plumbers. All of these in their various meetings devote more or less attention to the problem of codification. **We need one more association in the form of a sanitary congress,** which shall be composed of elected representatives from all these associations. These delegates will be instructed by their respective associations as to the subjects which have to be considered by the sanitary congress as a whole. Such sanitary congress will deliver its judgment on the points presented, and the united report will be brought back by the delegates to the various associations and will be acted upon at subsequent meetings. If acted upon favorably or unfavorably by these different organizations, there is nothing to prevent their resolutions to become law. As long as different associations continue to tinker and potter with things they consider essential, and in their tinkering and pottering clash with each other in their resulting resolutions, it is not to be expected that those they expect to influence will pay attention to their resolutions in the same degree as if they were presented as the results of conjunctive determinations.

It is possible to bring about such a sanitary congress in 1912. It should be held after all the state conventions and national cooventions have taken place. We would suggest the month of September as a suitable time. The place can be agreed upon by balloting the delegates elected. **We respectfully urge consideration of such a sanitary congress by every association in the country, and when we say that we mean that YOU who read this must consider yourself as an agent for the presentment of such consideration.**

Such a sanitary congress would have another advantage. It is not to be considered for a moment that the industries in which we are engaged have reached the final stage of their development. We must expect as many changes in the plumbing and heating industries during the next 20 years as have taken place in other industries during the last 20 years. We must be prepared for such change. We will have placed before us during the next two decades many new ideas and inventions, some of which will be as revolutionary in their character as the telephone was to those who had been accustomed to a stage-coach post.

A sanitary congress would consider in a broad spirit all the new things which had been presented during the current year. The congress would be able to suggest in its report actual testing installations of apparently worthy new devices, which should be tried out in sample cases under state and city supervision, and under varying local conditions, and the results of these tests would be embodied in the report of different city, state and national organizations, to be again considered by the sanitary congress for final comprehensive ruling In this way we would cease to grow lop-sided. There would be no snap judgment, no hasty adoption of an untried and untested apparatus. Better than that, there would be no prohibitory ordinance against a new device, which would rule unjustly against a struggling manufacturer. Permission could be granted in the form of a testing dispensation, if the apparatus was of such revolutionary type as to cause serious doubt of its beneficial application or sanitary stability. **We would know first and praise or condemn by the light of wisdom acquired.** Our codes would be national in their character, and if national in their framing, they would be national in their enforcement.

Some time ago we wrote an editorial on the need of a national sanitary university and a national board of health. We received approving expressions of opinion from many members of the trade. How soon these needed institutions will come into being, we do not know. We know that they will come, but we offer in this editorial an immediate possible step toward their final attainment. It involves no financial outlay, it imposes no arbitrary restrictions. It will bring the different associations of the industries into closer touch. It will smooth away some of the disagreements now existing. **It can be done now and you can do it. Will you do it?**



Exact Plumbing Design*

By John D. Small, Mechanical Engineer, Chicago

Twenty years ago the amount of plumbing designed prior to commencing work on building was so small it may be said that all work was laid out on the building by the successful bidder who acted in the dual capacity of sanitary engineer and contractor, of necessity assuming the former.

As the height of buildings increased and the complications arose in meeting the requirements demanded by the more rigid plumbing ordinances enacted from time to time, the practical plumber had his hands full to install the work and was only too willing to leave the design of the system to those who had made a study of sanitation and its relation to architectural design.

Today the sanitary engineer is kept busy planning and specifying the work to comply with the numerous requirements of rules and regulations governing such installations and to avoid difficulties arising during erection of work due to lack of provision for concealed piping, proper space, etc., while the general building plans are being developed. According to the axiom, "An ounce of prevention is worth a pound of cure."

The result is that the plumber has an absolute basis on which to figure and is on an equal footing with his competitor when he receives a set of plumbing diagrams and specifications clearly setting forth the entire piping system of drainage, ventilation of drainage, hot and cold water pipes, with all sizes indicated on same, and specifications describing in detail the various features of the design, leaving nothing indefinite.

The sanitary inspectors also appreciate complete and exact plumbing design as it enables them to better detect irregularities when they examine the plans submitted for approval before commencing work. The engineers and inspectors can accomplish great things in the line of healthful and hygienic design by working together, and the engineer has a duty in educating the architect with whom he is working in the ethics of sanitation to accomplish the best results.

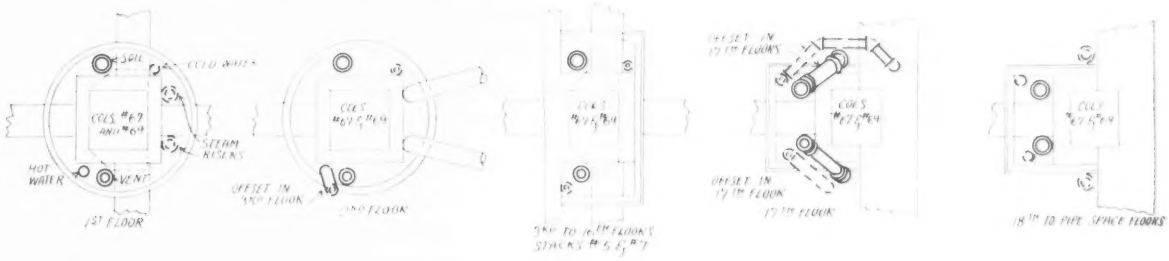


Fig. 1.

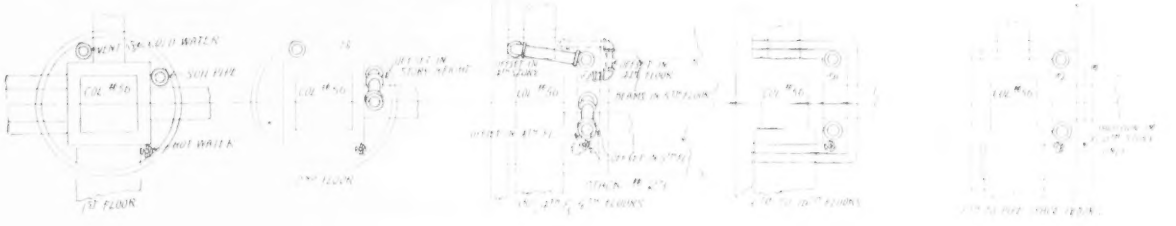


Fig. 2.

Among the many improvements most important perhaps is the arrangement of the pipes to best adapt them to the structural conditions, as well as serve their various purposes. The illustrations are reproduced from the plumbing plans of the People's Gas Light & Coke Co.'s building, Chicago, designed by the writer, for D. H. Burnham & Co., architects. All plumbing diagrams from this office are now accompanied by a set of similar details, showing location of stacks with relation to structural columns, beams and enclosures.

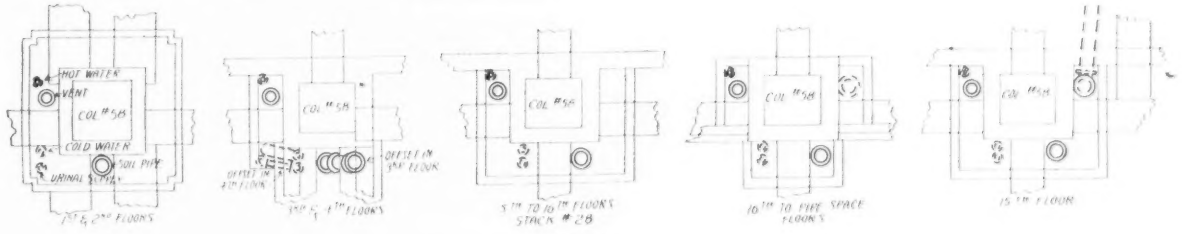


Fig. 3.

Fig. 1 shows details of stacks No. 5 and 7 passing through circular enclosures of columns in first and second story, continuing through third to sixteenth corrid

*Read at the fifth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, held at Trenton, N. J., Jan. 20-22, 1910.

partition and offsetting at 17th floor to face of column.

Fig. 2 shows stack 23 in similar columns through first and second stories, layout at third and fourth floors, showing offsets to accommodate the beams to come in right position for typical floors.

Fig. 3 shows stack 28 passing through square enclosure around columns in first and second stories. At second floor soil pipe is offset to get around beam, fourth to sixteenth floor layout being typical. This illustration also shows the typical connection to soil and waste risers throughout the building at all floors by the use of 45 degree fittings, the branch being full size of the risers and bushed to the size of run to fixtures. This provision permits of any fixture being connected to any stack that would not be prohibited by the ordinance. It also insures better drainage from the branch on account of the pitch.

Fig. 4 shows stack 32 passing through square column enclosure in first and second stories, in third and fourth continued at side of column and fifth to tenth on corridor partition, offsetting at seventeenth floor to face of column. These details are a guide to the plumber and are the direct result of former trouble experienced in execution of work with nothing but ⅛ or ¼ scale plans showing only small circles where pipes would come, the plumber only realizing that he could not get through when he ran afoul of a beam, and in many cases had to pull down his work without being in a position to charge for same.

The sanitary engineer has the power and means to avoid many of the troubles and complications arising in the field by a more careful and exact plumbing design with which to provide the plumber, and by so doing, he will have the satisfaction of knowing that he has kept many a journeyman from "taking his name in vain," as well as saving himself a great deal of annoyance by being called on the job to decide what to do to straighten out the trouble, which could have been avoided by a little forethought. As an old experienced architect once said to a young draughtsman: "You can't put too many notes on your plans, providing they are right." Likewise, details are a good thing on plumbing plans, providing they are right.

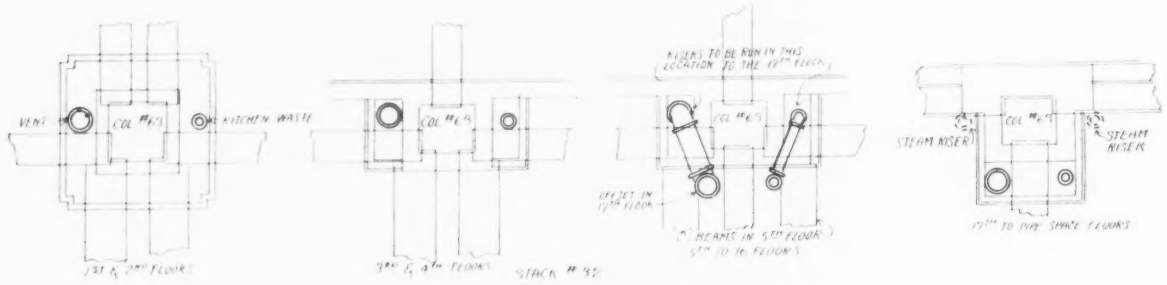


Fig. 4.

Kitchens and Laundries

Their Planning, Arrangement, Equipment and Sanitation

By Wm. Paul Gerhard, C. E.

CHAPTER X (Concluded).

Floors, Walls and Ceilings.

The receiving and sorting rooms, and the wash room proper, should under all circumstances have watertight washable floors, which may be either asphalted, cemented, granolithic or tiled. A smooth cement floor, however, is liable to be too slippery and thus may become the cause of accidents, and this is likewise true of tiled floors. To obviate this drawback the cement floor may be stippled, or roughened, and the tiles may be of the kind known as "riffled" or "embossed." The floors should be graded to trapped floor-drains, or in the wash room to the gutter, over which the wastes from the washing machines discharge. So arranged, the entire floors may be kept clean by daily washing and flushing with a hose. Sometimes a latticed wooden floor, or else cast-iron slats, are placed over the floor or parts of the floor of the wash room, in order that the laundresses may keep dry feet. The floors of the mangling, ironing and mending rooms may be of wood. For the drying room and the delivery room it seems desirable to provide tiled floors.

The walls of the laundry should be finished in hard plaster and be oil-painted, or they may be cemented. A tiled wall, or one finished in enameled-brick, is vastly more cleanly and sanitary, but is correspondingly more expensive, so that it cannot be used except in elaborate buildings. The receiving and the wash rooms are those which should in any case have washable wall surfaces.

Metal, wooden and plastered ceilings may be used in some parts of the laundry building, but in the main wash room a metal ceiling would be objectionable, because of the condensation of the steam vapors, and it is much better to have a waterproof ceiling, which may be either flat or arched, and finished with enameled brick, as shown in some of the interior views of laundries.

Ventilation, Lighting, Drainage and Sanitation.

The principal work-rooms of a laundry building require ample light, thorough drainage and good ventilation.

Sufficient floor space insures order and absolute cleanliness. Ventilation must be carefully studied, and the plans for it should be thorough and complete. The air in the wash room should be changed at least three times an hour, to remove the odors from soiled linen and the steam vapors arising from the washing operations. In the larger laundries special exhaust-fans driven by steam-power or by electricity are generally installed. The light in the main wash room should, if practicable, come from two opposite sides.

The drying chamber should be provided with efficient exhaust-flues to remove the moisture from the cloths.

Provision for Water, Steam and Electric Current.

A plentiful supply of water suitable for washing purposes is an important factor. Water for laundry purposes should be clean, odorless, free from color, iron and organic matter, and preferably be soft or of moderate hardness. Hard water, as is well known, is not suitable, and such water should be softened by special water-softening apparatus. Hard water, if it has what is called "temporary" hardness, due to carbonates of lime, may be rendered soft by boiling, or it may be softened by the admixture of small quantities of washing or caustic soda, ammonia, lye or borax.

Pure rain-water is the softest and therefore best, as it dissolves the soap most quickly. Washing in hard water means increased expense. Water holding in suspension or in solution earthy or organic matters, or water containing iron, discolors the linen, imparts to the cloths a yellowish tinge, and prevents the turning out of clean laundry work.

An ample supply of water should be provided, so as to make sure that the cloths are washed clean. It is usually estimated that 100 lb. of wash require from 450 to 550 gal. of water. Based upon the number of persons for whom washing is to be done in a hospital per day, a safe allowance is 5 to 8 gal. per person per day.

Steam is useful in a laundry, not only as motive power for the steam engine which runs the laundry machinery, but also in the washing machines, and in the cloths dryers. It helps to clean, it disinfects and it destroys the germs of disease. Steam is also required for the running of the exhaust ventilating-fans, for heating the water, and for warming the building.

It is usual to provide for each 1,000 lb. of daily wash a boiler capacity equal to 2.5 h. p.

In recent years the use of electricity has been introduced into the laundry, and chiefly for two purposes, namely, as motive power to run the steam washers, centrifugal washers and the mangles, and, second, for lighting purposes. To these uses might be added the employment of the electric current for heating and ventilating purposes. When machinery is run by electricity, it is best to run each set of machines by a separate motor, thus doing away with costly transmission shafting (see Chap. XIII.)

Estimates of Daily Quantities.

In planning a large laundry for an institution, approximate estimates should be made beforehand of the quantity of cloths to be washed daily, in order to determine the number, kind and size of the machines wanted, and, incidentally, the floor space required by them. The amount of the daily or weekly wash varies in different institutions and is probably largest in surgical hospital wards, and in hospitals for the insane.

I have been unable to gather any data regarding American practice, but find the following figures given by German hospital authorities: The amount of the weekly wash is taken at 8 lb. per bed; for surgical cases it is placed at 11 lb. and for reconvalescents it is given as 8.25 lb. Another authority estimates 1,000 to 1,500 pieces of wash for a hospital of 50 beds per week.

In hotels the amount of daily wash is placed at 0.44 to 0.66 lb. per person (which does not include guests' linen) and for hospitals the corresponding figure is given as 1.1 to 1.3 per person daily.

Disinfecting the Wash.

Special attention should be given in hospital laundries to the proper and efficient disinfecting of cloths and bedding of patients suffering from infectious diseases. Some hospital physicians claim that it is best to have the patients' soiled wash disinfected by the nurse in charge of the case before it leaves the ward. In this way much of the danger to the laundresses would be averted.

At a disinfecting station disinfection is usually accomplished by means of steam in special jacketed cylindrical chambers. The steam penetrates all infected articles and kills the germs.

When the soiled cloths contain blood or pus stains, the use of steam may become objectionable, for it causes the albumen to decompose and is apt to leave permanent stains. It is preferable to soak such wash in cold water, and then to wash and disinfect it. This, however, involves not a little danger to the person handling the wash. A better plan is to use chemicals for disinfection, such as solutions of carbolic acid, or a 5 per cent solution of lysol, in which the wash should be immersed for two or three hours. A small chemical disinfecting apparatus might prove useful if provided for each ward.

A steam disinfecting station should be arranged with two entirely separate divisions, the one for receiving the soiled linen, the other for the linen after disinfection. For this purpose the apparatus is generally set horizontally and provided with tight-closing doors at each end, a solid masonry partition being placed so as to divide the two ends.

An Enemy to Sanitation.

"Gee! Parents is queer things. They've got such old-fashioned ideas about washin' an' all that sort o' foolishness."—Life.

Proposed Plumbing Legislation for the State of Texas

Prepared by Ed. Braden, a Prominent Master Plumber of San Antonio, Tex.

An Act

To prescribe rules and regulations and adopt specifications for the installation of plumbing fixtures or other fixtures connected with waste to cess-pool, public or private sewer, and providing penalties for the violation of this act.

Be It Enacted by the Legislature of the State of Texas

Section 1.—The following specifications must be complied with and be the guide in the installation of any plumbing fixture or other fixture having a waste connected to any cess-pool, public or private sewer; provided, however, cities shall have the power to adopt other rules and regulations to further assure the safety of the public health, and also provided, any person or persons may adopt other specifications not in conflict with this act.

Specifications.

1.—House drains within and to a distance of 3 ft. outside the exterior walls of a building shall be of standard cast-iron soil pipe for a one-story building or cottage, of what is known as medium cast-iron soil pipe for a two-story building or cottage and extra-heavy cast-iron soil pipe for any building above two stories in height, laid in trenches of uniform grade, and where above ground shall be suspended to flooring by strong iron hangers, or fastened to wall by strong iron hooks. They shall have a fall of not less than 1 ft. in 100 ft. toward outlet. All changes in line of pipe shall be made with regular fittings, and connections with horizontal pipes shall be with Y branches and sanitary tees, except where branch is smaller than the main. All soil pipe and fittings in buildings must be tar coated inside and outside, free from holes or other defects, and extend at least 1 ft. above roof, the joints packed with oakum and run with molten lead, thoroughly calked.

2.—All vent pipes must extend not less than 1 ft. above roof, or may, in case of no independent vent pipe, connect into soil pipes not less than 1 ft. above highest fixture, and in no case shall any vent terminate in or be laid through a chimney flue; they shall be run as direct as possible and 45 deg. ells used at all times where practical.

3.—All connections of lead to iron shall be made with brass ferrules, Raymond pattern combination ferrules, or brass solder nipples, calked or screwed to the iron and wiped to the lead pipe. No ferrule known as the drive ferrules shall be used. Ferrules must conform in weight as specified for cast-iron soil pipes.

4.—All lead traps, lead bends or lead soil pipe shall conform to the weight specified for cast-iron soil pipe, namely, standard, medium or extra-heavy. Each and every fixture having a waste pipe shall be separately and independently trapped, except as hereinafter provided for, placed as near the fixture as practical, and never more than 2 ft. from the fixtures it serves, excepting that a continuous battery of lavatories or wash trays, consisting of not more than four lavatories or three wash-trays, may be served by one trap of not less than 1½ in. for lavatories and not less than 2 in. in size for the wash-trays and the traps, to be separately vented. Each and every trap shall be separately and independently protected from siphonage and air pressure by special vent pipe, except when using half S traps, by a circuit vent branching into the vent pipe above the highest fixtures or taken at least 1 ft. above the roof. No vent from any trap shall be used as a waste or soil pipe. No waste from any fixture shall be connected to the trap of any water closet. Vent pipes from water closets shall be connected at a point directly below the floor. When installing bath-tubs and lavatories where the traps of same are not more than 4 ft. from the stack, and the waste from each fixture discharges separately into the stack on the same level with the outlet of the trap and no fixture connected in above that point, then the bath-tub and lavatory need not be separately vented. When the trap of a kitchen sink not over 4 ft. distant, is directly connected to the 4-in. stack with a half S trap, and the combined area of the traps of all fixtures connected to this stack as specified for bath-tub and lavatory, etc., does not exceed 4 in., then the trap of sink need not be separately vented; traps for bath-tubs, sinks and wash-trays shall not be less than 2 in.; for urinals and watering-troughs 1½ in.; for lavatories 1¼ in.

5.—Wooden bath-tubs, or bath-tubs cased with wood or wooden rim or inside painted bath-tubs, are prohibited. They shall be of non-absorbent material.

6.—Iron body cleanouts with brass trap screws shall be placed on all horizontal soil or waste pipes where it is practical, and must be of the same size and weight as the horizontal soil or waste pipe. Where two fixtures using half S traps waste into a sanitary cross from opposite sides of a wall, or any number of water closets are connected into an octopus soil fitting, so long as said fixture or closets are not more than 4 ft. from the main stack, then each fixture need not be separately vented. The size of vent pipes for all fixtures having 3-in. traps or over must not be less than 2 in. All other vents shall not be less than one size smaller than the trap it serves and increase one size up to 2 in. for the addition of every two fixtures. Vent pipes must in all cases be of cast-iron, lead or brass, or galvanized iron pipe. Black wrought-iron pipe or black steel pipe shall not be used for a waste or vent. No rubber vent, rubber slip joint or rubber flush pipe connection shall be used. Waste pipes from all fixtures shall be of cast-iron, lead or brass and not less than the following sizes: For water closets, 4 in.; for bath-tubs, sinks and wash-trays, 2 in.; for urinals and watering-troughs, 1½ in.; lavatories, 1¼ in.

7.—Drip or overflow pipes from safes under water closets or other fixtures or from tanks or cisterns shall in no case be connected directly to the drainage system, but shall be carried to some place in plain sight. Waste from any refrigerator or other receptacle in which provisions are stored, shall not be connected direct with the drainage system, but shall be arranged to waste into an open tray in plain sight below. This tray may be connected with the drainage system upon being properly trapped and vented like any plumbing fixture. No sediment drain from any boiler or drain from any stop and waste cock shall be connected with the sewer or house drain. Waste pipes from saloon fixtures or butcher shops, such as ice boxes or fixtures of this kind, must waste into a separate trap and be vented as provided for plumbing fixtures. Floor drains from stables, wash houses, cellars, carriage houses, or floor drains of any kind when connected to a sewer or waste system, must first drain into a cess-pool sink, built of brick, concrete or cast-iron, not less than 2 ft. diameter, and 3 ft. deep, water-tight, properly trapped and vented the same as provided for plumbing fixtures.

8.—Water closets shall be glazed earthenware in one piece or enameled cast-iron, all exposed, the wooden work to consist only of a seat with or without cover. In no case shall any wood casing be allowed. Every water closet must be supplied with water from separate tank or cistern of not less than 6 gal. capacity, and no flush shall be less than 1¼-in. pipe. Low down water closet combinations or flushometers that insure a thorough and perfect flush to the bowl are not prohibited. No pan, plunger, long hopper, or direct supply water closet combination, or closet having an unventilated space, or whose walls are not flushed at each discharge, shall be used.

Section 2.—It shall be the duty of any person or persons, owner, agent, manager or tenant, of any building where an inspection is ordered by the State Board of Health or County Health Officer, to cause or have repairs and changes made as directed in writing, not in conflict with this act.

Section 3.—Any person or persons, owner, agent, manager or tenant, refusing, failing or neglecting to comply with any of the provisions of this act, shall be deemed guilty on conviction of a misdemeanor and subject to a fine of not less than $10 or more than $100, in the county where such violation was committed, each and every day to constitute a separate offense after due notice of 10 days by said State Board of Health or County Health Officer.

Section 4.—It shall be the duty of any peace officer instructed by the State Board of Health or County Health Officer, upon receipt of the knowledge that any part of this act has been violated, to go before the justice of the peace of the precinct of the county where the alleged act or omission is alleged to have been committed, and cause a warrant of arrest to issue against the party or parties violating any of the provisions of this act; and any person or peace officer of the county where any violation of this act is committed may, by affidavit or information, cause the arrest of the party or parties violating any of the provisions of this act.

Section 5.—Every city that has a public or private sewer system, or permits the use of cess-pools, that have plumbing fixtures or other fixtures connected with a waste, shall have a sanitary plumbing ordinance, not in conflict with this act, and provide for inspection. Buildings that do not come under the jurisdiction of local authority, shall comply with the provisions of this act.

Whereas, there are no existing plumbing laws prescribing rules and regulations and adopting specifications for the installation of plumbing fixtures, etc., fixing penalties for the violation of the provisions of this act, an emergency therefor exists that the rule requiring bills to be read on three several days be suspended, and that this bill take effect and be in force from and after its passage, and it is so enacted.

CHIEF SANITARY INSPECTOR CHAS. B. BALL GIVES ROUSING TALK BEFORE ROGERS PARK WOMAN'S CLUB.

Chas. B. Ball, chief sanitary inspector of Chicago, gave a rousing talk before the Rogers Park Woman's Club on Tuesday afternoon, November 7th, on "How the Other Half Lives in Chicago." He mentioned that the use of cellars as living rooms is actually on the increase in Chicago, and that he has found many instances of families of five persons and more sharing a single sleeping-room to which the light of day never penetrates. One sentence of Mr. Ball's talk is well worth memorizing, namely: "The hospitality of the saloon is not to be blamed for drunkenness as much as the inhospitality of the home."

AN UP-TO-DATE PLUMBING ESTABLISHMENT.

The accompanying illustration shows an exterior view of the up-to-date plumbing and heating establishment of W. E. Bouillon, at 121 N. Kickapoo St., Lincoln, Ill. The business was started in 1893 by the present owner, W. E. Bouillon, who learned the plumbing trade in the shop of Bouillon & Patterson in Lincoln, Ill., a firm composed of Mr. Bouillon's father and Frank U. Patterson, the latter now located at Springfield, Ill., and at present president of the Illinois State Association of Master Plumbers. Mr. Bouillon became a full-fledged journeyman plumber in 1886 at the age of 19. He served as a journeyman for two years and was thereafter manager of a plumbing and heating establishment for five years, when he decided to go into business on his own account.

W. E. Bouillon's Up-to-Date Plumbing Establishment at Lincoln, Ill.

Although he started in a very modest way the venture proved a success from the beginning, due to his close and careful attention to business. The volume of business handled has grown from year to year until it has become one of the best equipped establishments in that part of the state of Illinois, and to take care of the business promptly it was found necessary several years ago to open a branch-office and show-room at Delavan, Ill. The establishment at Lincoln is located in the heart of the city in a building of modern construction, its office and show-room occupying a space of 22x90 ft., and its workroom a light basement of the same dimensions.

January 24 and 25, 1912.—The 20th annual convention of the Illinois Master Plumbers' Association, at Decatur, Ill. Headquarters will be established at the St. Nicholas Hotel. The officers of the association are: President, F. U. Patterson, Springfield, Ill.; vice-president, Wm. J. Hilliard, Elmhurst, Ill.; secretary, W. C. Haviland, Aurora, Ill.; treasurer, Thomas Cody, Peoria, Ill.

May 14-17, 1912.—The sixth annual convention of the Master Boiler Makers' Association, at Pittsburgh, Pa. Headquarters will be established at the Fort Pitt Hotel.

The Other Way.

Baldwin—Got your letter today. I see you have finally got to using a typewriter. Do you run your typewriter yourself?

Old Boy—No, she runs me mostly.

THE JOURNEYMAN AND HIS HELPER

JOIN HANDS FOR BETTER WORK

"THE SQUIRE" CONTRIBUTES TO THE MELTING-POT.

Editor "Domestic Engineering":—I hate to confess it, but after reading friend B. T. U.'s tirade against the bookkeeper master plumber (?) I am at a loss as to just how to proceed. To begin with, several questions were raised as to the manner in which other merchants handle their wares, but the fact remains that B. T. U. has avoided any further reference to these with all the care that I would naturally display in keeping away from a case of scarlet fever or the measles, and I therefore take it for granted that the only thing that is irritating B. T. U. is the fact that a few poor misguided individuals (myself included) learned the office end of the plumbing business instead of wearing the overalls. For that reason, we are not entitled to assume the responsibility of conducting a plumbing establishment.

I hold these views:—

First. The ideal plumbing establishment is conducted by two men, one a man with business training, the other a practical man; failing to get this combination, two business men with sufficient business to employ a practical foreman.

Second. The elimination of this wholesale estimating on work and a charge for estimates and calls for the purpose of dispensing knowledge.

Third. The placing of the business upon a mercantile basis, all material to be sold at certain fixed prices, and installed by labor at day rates.

To begin with, it takes two men properly to conduct a plumbing establishment, one to handle the inside end of the business and the other to do the outside scouting. One man is too badly handicapped to attempt it alone.

There are too many estimates given out and there is a disposition among the masters to run their heads off figuring work, whereas if the business were placed upon its proper basis, the customer could examine the wares as displayed in the master's place of business and make his selections in keeping with his pocket-book and taste.

In view of the fact that the editor of this most worthy trade-paper has taken a stand in behalf of the merchant master plumber, as is evinced by his masterful editorial on "Competition from Mail-Order Houses and Hardware Dealers," it seems needless on my part to present any further argument in its behalf.

I realize that B. T. U. is looking at this proposition from a different angle than that of the writer, and that accounts to a large extent for the differences in opinion. Some day, perhaps, B. T. U. will be the proprietor of a business of his own, and it is needless to say that after shouldering the load for a while he, too, will have another side of the business to consider.

However, we are told that this country is the "melting pot" of the nations of the world, and it is true as gospel, so why not make of "Domestic Engineering" the melting-pot of our opinions, and if we will each contribute the best that is in us, we will get something out of the pot besides the steam (in other words, the hot air).

Minneapolis, Minn. "The Squire."

ON FILING CLIPPINGS FOR REFERENCE.

Editor "Domestic Engineering:"—Sometime ago I saw an article in your journal on "Filing Clippings for Reference" and as I have done a great deal of this for the past four years, with articles taken from the different trade journals, I thought perhaps my method of handling this might be of some interest to your readers.

After I have read the magazine through, I commence at the back cover and tear it off; then, with the point of a knife, I raise the ends of the metal binder. I tear all the leaves clean from this back end until I have reached the article I am interested in, then remove it carefully the full size of the page, and put it away until I have all the articles from six months' issue that I wish to save. I bind up a year's issue at a time in some cases.

I now arrange my pages, according to the dates they were issued, each magazine by itself. I take thirteen sheets of white paper of typewriter size, ruled, and cut and letter with a pen, like the index of a ledger; this I put on the top of my pages so as to bring it at the front of my book.

I next get me a cover. I used to take a sheet of buff detail paper, such as the draftsman uses, and cut it out one-half inch larger than the pages; then I would make a small hole with the point of my knife on the back margin of the page, in three places; I then put my cover on and made holes in it to match the hole in the pages. Then with a long brass metal binder I bought at a stationer's, I would bind the whole mass together. I now have all my pages and index in first-class book form; I next take a pen and renumber the pages, from one to the end. Then I turn to the front and begin to index the articles according to their title, under the letter in my index-pages.

I think "Domestic Engineering" must have known what I was doing, and thought it would save me some time, because I see that it began the first of the year to publish an index every quarter, which I now use, with many thanks, as I now only have to mark the index with a star to show the articles that I have saved.

I have also found a hard paste-board binder, called the "grip binder" that I can buy for 25 cents that answers the purpose finely. I have also given up making the holes with a knife; I find I can do better with the regular file-perforator, that is used in all offices, the cheap kind that you fasten to the wall.

In closing I wish to state that I now have some 15 volumes that I have accumulated this way in my reference library, for which I would not take a fair sum of money, and I think I can find any article I happen to want, as quickly as by any other system I have seen or heard of. I have no small pieces to get lost, and I can bind up a volume more quickly than one can be pasted full. I avoid the wear that comes from handling the small separate pieces, and if I wish to show or lend a friend an article, I just let him have the volume it is in, which is no trouble at all.

Little Rock, Ark. A. J. Purcell.

BEIER BROS., ST. PAUL, MINN.

Beier Bros., engaged in the plumbing, heating and gas-fitting business at 452 Selby Ave., St. Paul, Minn., have an attractive store, well kept, and in which the show-room features are given special attention. The firm commenced business in St. Paul in 1905, coming from Detroit, Mich. The Twin Cities appealed to the Beier Bros. as the best field of endeavor, owing to the rapid growth anticipated, and their choice has been justified amply since that time. The first business-stand was located at 370 Jackson St., and a general plumbing and heating business was engaged in, on similar lines pursued by 90 per cent of those in the trade, making contracting their strong feature.

An Attractive Exterior View.

In 1907 the firm moved to its present location, at 452 Selby Ave., in a prominent residence-district, and established what the Beier Bros. call a "Quality Shop." Industrious efforts were made along a different line of action, the business being conducted from the merchant's point of view rather than that of the exclusive contractor. One of the Beiers, writing recently to us, says:

"Since making the change, we have a better class of work, less competition, and more time to sell a customer the specialties necessary to furnish his job complete at a better price. We have been able also to retain that which rightfully belongs to our business, rather than let gas-fixture men or the department-stores reap the benefit. To illustrate what the average plumber neglects, here in this city a gas-fixture man has sold this year about 50 automatic gas-heaters. All the plumber got out of this was the making of the connections. The big profit went to the fixture-man." The illustrations show to advantage the effective display made by the firm to convince the prospective customer of its ability to furnish everything for the job. The lines represented include the latest devices in plumbing, automatic instantaneous and copper-coil gas-heaters, completely connected for demonstration, portable showers, bath-room trimmings, steel medicine-cabinets, closet-ventilators, etc.

A Distinct Invitation to Buy.

A Corner in Bath-Tubs.

Gas Water-Heating Apparatus Ready for Demonstration.

The reader will note in the exterior view a washing machine ready for demonstration in one of the windows. The three views of interior display show plainly the attention to lighting of the goods, their maintenance in a state of perfect cleanliness, and their symmetrical arrangement. Beier Bros. are to be complimented on their enterprising showing.

NEW ENGLAND NOTES.

Massachusetts.

Clinton.—The Jennison Plumbing Co. is to install the sprinklers in the new mill which is in process of construction for the Clinton Wire Cloth Co. Work on the erection of the building was started a fortnight ago.

Revere.—One of the Chelsea plumbers was in court a few days ago charged by the Revere authorities with doing plumbing work without a permit. He paid a fine of $15.

North Dighton.—Cummings & Day have the contract for installing a new heating plant in the residence of Herbert Ballou on Lincoln avenue, which has just been completed.

Webster.—Gatzke & Kindler have the contract to install the heater at the Polish Political Club rooms on Harris street.

Adams.—John J. Carney, the local plumber, has had a gang of men engaged in installing steel ceilings in the offices of Dr. Alfred Desrochers on Melrose street.

Fall River.—The contract for heating and plumbing the new park reservation headquarters on Blossom road has been awarded to William Kennedy, who was the lowest of half a dozen bidders.

Maynard.—Robert Kierstead, who has been connected with the American Woolen Co. in the capacity of plumber for some time, has severed his connection with that concern and is to open a plumbing and stove establishment on Nason street. Mr. Kierstead is a good workman and has had ample experience.

Boston.—Because of the dangerous condition of the furnaces it has been found necessary to close Christ Church—the church from the belfry of which the lanterns were hung which sent Paul Revere on his famous midnight ride in 1775 and which is popularly known as the Old North Church. The church is to be repaired and improved and a new heating system installed, before the doors are again thrown open to the public.

New Bedford.—Bids have been received for the extension of the heating-plant at the city stables but because of the wide variance of the figures the city government has not placed the contract as yet. There were three bids, as follows: Frederick E. Earle, $1,900; the P. F. Wood Boiler Co., $3,999; and the New Bedford Boiler & Machine Co., $3,856. The lowest bidder agreed to do the work in four weeks and furnish a bond, as required, as did the others.

Rhode Island.

Pawtucket.—The master plumbers at their recent meeting reported trade conditions throughout the city the best and all plumbers having plenty of work. President Albert E. Shaw presided.

Vermont.

Burlington.—The contract for plumbing the new schoolhouse at Randolph has been awarded to J. H. Lamson's Sons for $1,779.50. The heating and ventilating contract has been placed with the American Warming & Ventilating Co., of Elmira, N. Y., for $5,296.

Connecticut.

Waterbury.—M. J. Daly & Sons, Inc., have been awarded the contract for the plumbing, heating and ventilating for the two new factory buildings to be erected on Brown street for the Shoe Hardware Co.

New Haven.—Yale University's proposition to erect the new central heating-plant, recently authorized, at Sachem street and Winchester avenue, is meeting with strong opposition on the part of the residents of that vicinity. They claim that the high chimney and the plant generally will result in a depreciation of property values.

OPINIONS OF THE PRESS.

Interesting Decisions in Sanitary Matters.

Seattle Plumbing Inspector's Ruling on Vents Quashed by the Superior Court.

Through the interpretation placed on the Seattle plumbing ordinance by Judge John F. Main in the appeal case of the city against William E. Holmes, householders will hereafter be saved from $75,000 to $100,000 per year in installing plumbing.

Holmes was fined in justice court for violating the ordinance by installing plumbing without sufficient vents for drain pipes. The superior court held with Mr. Holmes that his system was sufficient ventilation in the meaning of the ordinance, and discharged him from further responsibility in the case. John C. Higgins represented the defendant, and City Attorney Ralph Pierce the city.

"Through the interpretation of the city ordinance by plumbing inspectors, encouraged by journeymen plumbers of the city, and some of the jobbers, Seattle citizens have had to pay 25 per cent more for useless plumbing than the necessities of sanitary work demanded," said John C. Higgins recently. "Under Judge Main's decision this expense will be saved hereafter."

"Judge Main's decision means that Seattle will be permitted to take front rank in the modern sanitary plumbing of our homes," said W. E. Holmes. "Old, needlessly expensive rule of thumb methods in the installation of plumbing have been discarded in most eastern and many western cities.

"Some two years ago, after a long-drawn-out battle, our plumbing ordinance was partially amended in a manner that has saved the property owners and home-builders of this city multiplied tens of thousands of dollars in new plumbing installation. Judge Main's decision means that the home-builders in our own city will save an additional $75,000 to $100,000 annually in the cost of putting plumbing in their homes, and will have more sanitary, simpler and better plumbing. The Post-Intelligencer two years ago led the crusade for better plumbing for less money. The decision today is the result of a ruling on one section of the ordinance by Plumbing Inspector McIntyre against the simpler and less expensive method under certain conditions that affected chiefly cottages and residences. His ruling resulted in my resort to the courts in behalf of home-owners."—Seattle (Wash.) Post-Intelligencer.

Plumbers' Ordinance Enforced by Court.

The plumbers' ordinance which was passed by the council of Albuquerque, N. M., some time ago, requiring that every man who wished to do plumbing in this city must be equipped with a license was applied before Judge George R. Craig last week, when Antonio Apodaca appeared before him to answer to the charge of violating the new law. Apodaca was discovered using a fitter's wrench upon some pipe on the premises at 516 East Central, the work being done under the direction of Mr. Vickery. The complaint was made by Earl Bowdich, a member of the plumbing examining board. Judge Craig ruled that no apprentice or helper had a right under the ordinance to connect any pipe, as the same constituted plumbing.—Albuquerque (N. M.) Journal.

State Code Applies to Plumbing Work Where City Ordinances Conflict.

In response to a request from Plumbing Inspector W. H. Peterson, Youngstown, O., City Solicitor David G. Jenkins has rendered an opinion on the relation of the state sanitary code with reference to plumbing, with the Youngstown ordinances.

Solicitor Jenkins rules that the plumbing inspector shall enforce the city ordinances with reference to plumbing unless they conflict with the state code. The question which caused the inspector to ask for the opinion was a difference between the state code and city ordinances with reference to the installation of soil pipe. The code provides for extra large soil pipe and the city ordinance for standard size. The solicitor finds that in such a case the provisions of the code must be enforced as the ordinances, in provisions covered by the code, must conform with the state law.

The solicitor also rules that a penalty is fixed for all violations of the state code. While the code is vague in this respect and only provides a penalty for the owners of certain kinds of buildings, not including dwellings, it has provisions whereby architects, builders and plumbers can be held liable if they do not conform with the code while erecting structures or installing plumbing or other fixtures. While this gives owners of dwellings and residences a loop-hole to dodge the law and saves them from prosecution after a building is completed, it does not protect those who do the work and they can be prosecuted for failing to do the work according to the code. The penalty is a fine not exceeding $1,000 and imprisonment for not more than 30 days.—Youngstown (O.) Vindicator.

Wages and Conditions of Employment of Australian Plumbers

Through the kindness of Mr. James Marshall, of R. Marshall & Son, an old established firm of licensed sanitary plumbers and gas-fitters in Victoria, Australia, we have the pleasure of giving our readers an idea of conditions in the plumbing trade in Australia.

In accordance with the provisions of the Factories and Shops Act, a special board was appointed to determine questions regarding wages and conditions of employment of persons "employed either inside or outside a factory or workroom in the process, trade or business of a plumber or gas-fitter, wheresoever employed in any plumbing work, including electrical or gas-fittings, in connection with the erection or repair of buildings." This determination went into force on Dec. 2, 1910. For the convenience of our readers we have substituted dollars and cents for pounds, shillings and pence of the authorized report, published in the Victoria Government Gazette.

Wages Rates.

The lowest prices or rates payable shall be: Foremen, 40 cents per hour, or $17.40 per week of 44 hours. Persons employed on first-class plumbing work, 37 cents per hour, or $16.25 per week of 44 hours. Persons employed on second-class plumbing work, 32 cents per hour, or $14 per week of 44 hours.

Rates of Wages of Apprentices.

The lowest prices or rates of payment payable to apprentices shall be as follows:

During first year at the trade, $1.83 per week of 44 hours.

During second year at the trade, $2.44 per week of 44 hours.

During third year at the trade, $3.66 per week of 44 hours.

During fourth year at the trade, $4.86 per week of 44 hours.

During fifth year at the trade, $6.69 per week of 44 hours.

During sixth year at the trade, $9.13 per week of 44 hours, and thereafter the minimum wage fixed by the board.

Proportion of Improvers.

The number of improvers who may be employed either inside or outside a factory or work-room, in the process, trade, or business of a plumber or gas-fitter, including those employed in any plumbing-work (including electrical or gas-fittings) in connection with the erecting or repairing of buildings, shall be one improver to the first three persons so employed as aforesaid who receive not less than the minimum wage of 32 cents per hour, and thereafter one improver to every seven additional persons so employed at the said minimum rate of wages.

Rates of Wages of Improvers.

The lowest prices or rates of payment payable to image—

Commencing work at the trade at under 16 years of provers shall be as follows:

During first year at the trade, $1.83 per week of 44 hours.

During second year at the trade, $2.44 per week of 44 hours.

During third year at the trade, $4.27 per week of 44 hours.

During fourth year at the trade, $6.69 per week of 44 hours.

During fifth year at the trade, $8.52 per week of 44 hours.

During sixth year at the trade, $10.96 per week of 44 hours, and thereafter the minimum wage fixed by the Board.

Commencing work at the trade at 16 years of age—

During first year at the trade, $2.44 per week of 44 hours.

During second year at the trade, $3.66 per week of 44 hours.

During third year at the trade, $6.08 per week of 44 hours.

During fourth year at the trade, $8.52 per week of 44 hours.

During fifth year at the trade, $10.96 per week of 44 hours, and thereafter the minimum wage fixed by the board.

Commencing work at the trade at 17 years of age—

During first year at the trade, $3.05 per week of 44 hours.

During second year at the trade, $4.27 per week of 44 hours.

During third year at the trade, $6.08 per week of 44 hours.

During fourth year at the trade, $8.52 per week of 44 hours.

During fifth year at the trade, $10.96 per week of 44 hours, and thereafter the minimum wage fixed by the board.

Commencing work at the trade at 18 years of age—

During first year at the trade, $3.66 per week of 44 hours.

During second year at the trade, $4.86 per week of 44 hours.

During third year at the trade, $7.30 per week of 44 hours.

During fourth year at the trade, $9.72 per week of 44 hours.

During fifth year at the trade, $12.16 per week of 44 hours, and thereafter the minimum wage fixed by the board.

Commencing work at the trade at 19 or 20 years of age—

During first year at the trade, $3.66 per week of 44 hours.

During second year at the trade, $5.47 per week of 44 hours.

During third year at the trade, $8.52 per week of 44 hours.

During fourth year at the trade, $10.96 per week of 44 hours, and thereafter the minimum wage fixed by the board.

Time of Beginning and Ending Work.

An ordinary day's work of any person shall not begin earlier than 7:45 a. m., and end not later than 5:15 p. m. on every day except Saturday, when work shall begin not earlier than 7:45 a. m. and cease at not later than 12 o'clock noon, subject to the following conditions: That if any work be done earlier or later than the hours above specified, overtime shall be paid for at the rate hereinafter provided.

Overtime.

Any person who is engaged outside the hours specified as the time of beginning and ending work upon each day, shall be paid for such overtime according to the

rates specified in the following table for each hour or fraction of an hour mentioned therein: For work commencing and done within two hours of the usual time of starting work for the day; for work done between the usual time of ending the ordinary day's work and midnight of the same day: Time and one-third.

For work done between midnight and two hours previously to the usual time of starting work for the day, or for work done during any time within those two hours, where having commenced earlier it occupies the whole or any portion of those two hours: Double time.

If within the hours of commencing and ending work as specified, any person works beyond the maximum number of 44 hours per week, he shall be paid overtime at the rate of time and a third for the extra time so worked.

Special Rates for Sundays and Public Holidays.

The special price or rate of payment payable to any person for all work done on Sundays or on the undermentioned public holidays: New Year's Day; the 26th day of January in each year; Eight Hours Day; or such other days as may be observed as public holidays in lieu thereof; Good Friday; Easter Monday; Christmas Day; Boxing Day, or such other days as may be observed as public holidays in lieu thereof, shall be double the wages price or rate fixed by this determination.

Allowances.

The following additional rates shall be paid to any person when engaged on work within a radius of from two miles to 12 miles of a center:

On all work distant from a center from two and not exceeding five miles, 1 cent per hour extra; on all work distant from a center more than five miles and not exceeding 10 miles, 2 cents per hour extra; on all work distant from a center more than 10 and not exceeding 12 miles, 3 cents per hour extra.

Provided that the employer shall not be required to pay such extra rates if the employee travels to his work on foot during ordinary working hours, for which he is being paid the usual rate of wages, or if upon such days the employer provides the employee with the means of transit to and from his work within the aforesaid distances respectively; and in case he supplies such means of transit for one way only, he shall be required to pay on every such occasion no more than a moiety of such extra rates.

Where the work is distant more than 12 miles from a center, and the employee is unable to return to his home the same night, the following additional rates shall be paid:

If the work occupies less than one week, 18 cents per hour extra; if the work occupies one week or more, 12 cents per hour extra.

Provided that if the employer engages and pays board and lodging for the employee while he is employed on such work, he shall not be required to pay such extra rates.

As compensation for means of transit, 2 cents per hour extra for every 10 miles or fraction thereof, in addition to the first 12 miles that the work is distant from the center.

Provided, however, that the employer shall not be required to pay such extra rates when he provides means of transit for the employee to and from such work.

Tools and Appliances.

Each employee must provide himself with the tools usually found by working plumbers or gas-fitters for the proper performance of such work as he may be engaged upon, except those hereafter mentioned, but if any employee is required to provide any of the following tools or appliances: Calking-irons, frame chain and keys, chain wrenches, mandrils, metal pots, pipe-cutters, plumbing-irons, ratchets, stocks, dies, stone-drills, taps and drills for brass or iron threads, or vises, 12 cents per hour in addition to the ordinary rates fixed by this determination shall be paid by the employer.

Definitions.

Wherever occurring in this determination, the following expressions shall have the meanings hereby assigned to them:

A "center" means an employer's usual place of business, and all distances from a center shall be computed by the nearest practicable route, but where the locality of the work is nearer to the employee's residence than the center, all distances shall be reckoned from the employee's residence which, in such case, shall be deemed to be the center.

Where an employer has no permanent place of business, his place of residence shall be deemed the center.

A "foreman" means an employee who is authorized by his employer to give instructions to, and be responsible for, the work done by an average of, at least, three other adult employees, such average to be taken for six days.

The following kinds of work shall be deemed to be first-class plumbing work:

(1) All sanitary plumbing work, where connected or to be connected with any public or private system of sewerage.

(2) Laying, fitting, fixing, repairing, or maintaining hot-water, steam, or block-tin piping and apparatus (including in addition the making thereof) for domestic, power, cooking, or heating purposes, and iron cold-water piping of over three-quarters of an inch in diameter for any purpose whatever, except rain-water purposes.

(3) All classes of lead work other than half or three-quarter inch main or meter connections, chimney gutters, flashings for gutters, verandas, chimneys, or gables.

(4) Laying, fitting, fixing, repairing, or maintaining all gas pipes and fittings connected therewith (including the telephos), also beer-engines, and pipes leading thereto; and the following kinds of work shall be deemed to be second-class plumbing work:

(1) Making, repairing, or maintaining flat or corrugated iron, steel, zinc, or copper baths, sinks, troughs, tanks, or vats, and the fixing of same where not connected or to be connected with any public or private system of sewerage.

(2) Laying, fitting, fixing, repairing, or maintaining half an inch and three-quarters of an inch iron water piping (including the lead main or meter connections and taps).

(3) Laying, fitting, fixing, repairing, or maintaining zinc, copper, flat, stamped, or corrugated iron or steel (including gutters, spouting, ridging, flashings for roofs, rain-water, ventilating, flue, or exhaust pipes), lead chimney gutters, and flashings for verandas or roofs, and fixing or repairing of cast-iron rain-water gutters, spouting, and down pipes, and any other repairs to roofs not herein specified.

(4) Fitting up, fixing, repairing, or maintaining all classes of pull or mechanical bells, electrical fittings and wires, and speaking tubes.

When you want to discharge a man whom you think deserves two weeks' notice, give him two weeks' pay and don't allow him to come around again. A man who puts in his time during his period of notice never does any work, doesn't have time to hunt another job and is thus forever sore at you. The good will of a former employe is worth considering, particularly when it doesn't cost anything.

Domestic Engineering" Cartoon on "The Commercial Black Hand"—LIV.

Does the Black Hand Threaten Your Profits?

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

The Necessity of System in the Plumbing Business*

By J. B. Coningham, Omaha, Neb.

Your president has stated that he visited Nebraska once on an invitation to assist in organizing a state association of master plumbers. He did visit us, and we were very pleased indeed to meet him and his committee, for Nebraska had been considering the proposition of organizing an association and we needed the assistance of a master hand. The assistance given us by your committee was needed as a spur of encouragement to go on, and there is no spur of encouragement greater in its effect than that of a committee coming from a so well-established and successful body of master plumbers as that of Iowa. They so inspired our masters by their timely advice that we immediately formed a permanent organization and are now operating as a well-organized body, well on the road to greater success.

Just a little explanation of my presence, so you will not misunderstand me or misconstrue what I would like to convey to you. I would like to say that I am not a practical plumber, never have been an apprentice, though I served an apprenticeship in an engine-room, then a traveling man, putting in 15 years on the road selling goods. Omaha, in its disorganized state, sought some other influence or guiding hand to carry the organization to success, and more especially to continue the organization, inasmuch as they had organized and gone to pieces on several different occasions. So they sought me for secretary, choosing other than a master plumber for secretary to guide the business end of the association. So what I have to say is from the standpoint of a business man outside of your profession, otherwise your customer.

First, I invite your attention to some things which you have to contend with as a master plumber. First, you come in contact with petty jealousies indulged in by other master plumbers. I take it, that inasmuch as a well-organized community must have a system of sanitation, which carries with it an absolute necessity for a master plumber, and as boards of health are delving in the arts and science of greater sanitation, which necessarily demands that class and kind of fixtures and systems that best preserve the health of a community, you, as professional men in that line, are expected to conform to this advanced science, and be capable and able properly to install the systems as required. To do so, there must be an everlasting advance in your art or profession, and you cannot stand still. This is an accepted fact. No profession, no art or science, stands still in this age. That being a necessity, the existence of another master plumber is a natural consequence. It appears to me to be the height of folly to hold or permit to linger in your minds, to actuate your movements or conduct in business, any petty disrespect or jealousy to another master in your business. For the fact is, I see naught to be gained by any indulgence in such conduct as petty jealousy. Then, too, there is another thing which you have to contend with in the beginning of your business which breeds a lack of confidence in yourselves. When you lose a contract, the job being taken by some other master plumber, you believe something is wrong, you are too easily discouraged, and prone to find fault with the other master. You have not the conviction of your own ability to buoy you up to a continued effort for success. You are prone to lie down and quit the job at the point of possible success, had you but continued. It leads also to an utter lack of confidence in your fellow masters. What I mean to say by that, is, when a proposition, and there are many of them, comes to you, do you stop and think, "Who is the other fellow? How about him? Will he do this? Will he do that? No, he is crooked and will get up something; he will sneak around somebody, and give me the worst of it." This is all wrong, I say, and breeds disease and chaos in your business.

Again, I would call your attention to a condition that you have to contend with, and invite for a moment's thought your attention as to the cause and the remedy for it.

You are affected by a class of careless, incompetent and unreliable workmen. Why? Because it has never been attempted, by you or others, to establish any semblance of a standard of workmanship, to which men must necessarily conform to be considered proficient to meet the necessities and requirements of your business.

How do you hire men? I am stepping aside for a moment in my talk to mention an instance in this line. The Omaha Association was notified by the journeymen along about the first day of June, that they wanted $6 a day and certain rules applied, and that if they did not get it immediately they would walk out. We tried after three or four meetings and conferences with them to arbitrate the question, but had no success. They did not flinch an inch. They said: "We have a strong local union, the strongest in America, and we will absolutely crush you if you do not give in." One of our board said: "Boys, supposing we do not give in, what will you do?" He said: "We will walk out tomorrow morning." "All right, that is your privilege." Out they walked. We took up the problem how to supply their positions and keep our business going. There was the real test of the ability of the master in selecting and getting a force to carry on his business. I ask you the question, "What is your system of securing your mechanics?" You have none, never heard of one. "How do you hire men?" You look at a man, you can tell whether he is a good workman or not by just looking at him. You fellows may be corkers in your line, but I put in 15 years on the road selling goods, and I thought I could pick out a buyer out of a half-dozen men in a store; occasionally I made a mistake. I used to think I could land a fellow, sell him whether he wanted to buy or not. You cannot pick out a good mechanic by taking a look at him. You are good people, and you are capable of a great many things, but, excuse me, I cannot credit you with such superior ability.

There necessarily comes a requirement for some mode or manner to be adopted by your organized body to regulate that question, because of the results that arise from mistakes, requiring reformation. Careless workmen are expensive experiences for you. Our association could not get good men who would stay, merely by looking at them. After getting 50 or 60 who were incompetent, unreliable and everything not exactly good, we sent one of our masters to Cincinnati, O., opened up a shop and advertised through employment bureaus, asking for competent journeymen plumbers for employment in Omaha. Took them in there, gave them a city chart, and asked them, "Can you explain that, sir?" Let them go over it, gave them a lay-out to see if they could explain the work, and then asked them to wipe a 4-in. or a 2-in. joint to see what

*Read before the 22d annual convention of the Iowa State Association of Master Plumbers, at Waterloo, Ia., Jan. 17, 18 and 19, 1911.

kind of a job they could do. Sixty-five per cent of them when they got up against wiping picked up their hats and walked out. There were any number of gas-pipe men, but there were but few journeymen plumbers.

To know whether that system was good or not, we tried in the city of Omaha about 65 men who passed this preliminary examination and put them to work in our shops, and since that day, the 12th of August, we have lost but two on account of incompetency, and we have had four who asked to be excused because they would like to go back east. We have had 12 of them bring their families and rent houses, and one of them has bought his home. They are now permanent residents of our city, working every day. That was the system we adopted to correct the evil of incompetent, unreliable and dangerous employees.

System in Conducting Business.

Most all master plumbers, in fact, the percentage is so great I would say 90 per cent of you, were originally journeymen. Occasionally there is a man here and there who graduates from a college with a technical knowledge of how to conduct a business in a scientific way, who opens a plumbing establishment, or becomes connected with one. You are all skilled in a scientific way in the art of installing fixtures, but you lack the knowledge of how to conduct a business, that is the soliciting and getting of a job, the art of buying and the art of selling, and the art of proper conduct of that business. You get it by hard knocks and bumps of experience. Those who lived through it are here now. You know how many have fallen by the way-side. You need instruction and enlightenment on matters of this kind. You gain it only through your local association, your state meetings, and other cooperative information conveyed by your brother members whom you extend a confidence to.

I say that you lack the proper system or method of conducting your business. You do, and it astounded me, when I first stepped into your ranks and observed the lax manner or method of the conduct of the business. Fully 50 per cent of those whom I came in contact with among the master plumbers, would say, "I guess so, I think so, there ought to be. Well, yes, I think I have," and so much of that indefinite knowledge, that I wondered how they could continue business, and have so much "I think so, I guess so, and I ought to have" in their heads.

There are lax methods in the accounting for material that goes into a job, lax methods in the records you keep and accounting for tools that are used on a job.

One firm in the city of Omaha three years ago was convinced by a Chicago company, who were establishing what is termed a system in business, who easily showed them that they had lost $200 worth of tools on one job, the building of the Henshaw Hotel. How did they lose these tools? Did they melt? Were they utterly destroyed? No, they were found in the pawn-shops of the city of Omaha. How did they get there? Loose, lax methods in the conduct of their business permitted it. In the accounting for material, you are, many of you, exceedingly loose and lax in the manner of accounting for all that goes into a job; in charging correctly, rightfully, for every article, piece, fixture or trimming going into a job that you have taken at a fixed price. The lax method shows again, when you are asked to estimate, draw up plans, or submit figures for which you will make installation. You, in your system, or from an utter lack of system, lose hundreds of dollars each year from little things in those jobs. Will the supply-houses give you all the washers you want? Will they give you all the traps, bends and T's you need? I do not know of any of them who have those free boxes where the sign says, "Take One." I believe you pay for every one of those articles that goes into a job of plumbing. If that is true—and I know it to be true—then so is my statement that your system of properly accounting for the material that goes into a job is exceedingly deficient, or else you would not have such losses every year.

There is another little matter. Do you believe that any of your merchants in your town succeed in their business, and conduct a loose method in the credit account? Your scrutiny of your prospective customer is so lax that it is almost a forgotten question in your business. One of your delegates said to me this morning: "I've a credit system report. I do not give credit to those who are entered there with a bad rating. I make them come over with the money first." He is the exception.

It is a very broad question, the question of credit, too much for me to dwell on right here.

You have passed through the term of a journeyman and have now entered into business. Have you adopted a system of any sort? Do not be afraid of that word system. It is not so broad, and yet it is. You can confine it to a very small space, or to as large a space as you like. You have passed through that and have a fairly well established good working rule and system. What else do you lack?

Salesmanship.

This, too, must be considered by you. Maybe your attention has never been called to it. I see too much of the lack of knowledge of the art of salesmanship among you. You have ceased to be a journeyman. You are a salesman now, in your line, as much as any hardware man, stove man, shoe man, agricultural man, dry-goods man, or any other merchant in your city, salesman of your wares, and you use less of the art of salesmanship than most any other craft I have ever come in contact with. Do not take offense at my words. My purpose is to wake you up, and you will profit thereby.

When a salesman comes into your place he proceeds along lines that are well-established principles in his profession. He proceeds to show you his line. Do you do that with your goods? The thought merely enters your mind that you are selling bath-tubs and fixtures and things of like kind, and it rarely enters into your mind that the customer does not know what he is buying. You think that possibly he does. Ask me what I know about a bath-tub or a kitchen-tray. I know very little about what it ought to cost me, in a position where I can use it. Then you quibble with one another as to a proper profit to make on that bath-tub, and ask the question, is 20 per cent too much?

I am ashamed of you. You act like a lot of kindergarten kids. The world does not know anything about you. Your customer knows little or naught as to the true value of the articles you sell.

I had a little illustration just the other day. My wife succeeded in convincing me that it was time to buy a little Christmas present. She said: "I want to choose it." "What is it?" "I want to buy a library table, a runner and a nice electrolier." She said, "I do not want you to pick it out, but you can pay for it. But I want you to look at it before I buy it." I stepped into a store in the city of Omaha where they have lamps and fixtures, and I guess I must have been looking pretty good. When the salesman took a look at me, he walked over to the corner and he says, "This is something very nice." "Light it up." My wife asked: "How much?" "Forty-five dollars." I answered, "Did you take me for a Rockefeller or Carnegie?" He says, "Sir?" I laughed at him and

walked out. My wife says, "What is the matter?" No, I have been on the road too long, I am next to that business. That lamp ordinarily sells at about $24. So you ask me if 20 per cent on a bath-tub is too much!

I want to show you by this illustration, that there is no price too large for the salesman to get for his goods. It is not a question of what is an adequate profit to him on the goods, it is a question of what he can get. Take this home and use it in your business. Apply it with the art of a salesman. It is only a sale when that customer is satisfied and pleased with the purchase.

Go to some large department store in the city and ask the buyer, "What is the cost of some article you have for sale?" and you will be astounded. I saw in one place roses for ladies' hats, that cost $3.30 a gross, selling at 25 cents apiece, $36 a gross. Is that 20 per cent?

This lamp that I finally bought had an amber-colored shade. My wife's fancy was for an amber shade in the glass. She says that is the only kind now, the most popular kind. When we got home I called up the buyer of a large establishment where they sell articles of that kind—he is a gentleman with whom I am well acquainted—and asked him, "What is the reason that amber glass in the shades covering electroliers, sells at so great a price? Isn't that cheap glass?" "Yes, you are right, it is not the highest price glass on the market, but it is the fancy and popular today, so much so that they can get two, three and four times the price for amber-colored glass that they can get for the other colors." Is 20 per cent too much?

Now, as to the selling of fixtures. Are they the only things you sell? You sell your knowledge, your art and your labor. Did you learn it in a day? Go to an attorney's office and ask him a question, to you trivial, scarcely worth an answer, that is, in your judgment, for you know nothing about law, and the attorney considers it a question of great importance. He says: "I cannot answer you right now. You come in this afternoon, or tomorrow, and I will give you the information." Why? It has taken him possibly years to acquire sufficient knowledge to interpret the nature of men, the temperament, humor, and conduct of a court, and characteristics, and the possible or probable action of a jury; and it has cost him hours of labor, many dollars for books on the subject, properly to equip him to answer that question as you desire. But his bill for services is $10. You are astounded. The next day you may ask him a question, perhaps one of greater importance in your mind, which he answers right off. When you ask: "What is the bill?" He replies, "Oh, nothing, that is all right. Go ahead, come in again." You do not understand where the great difference in cost is for the information. He sells his knowledge that has taken years to cultivate; pays for the privilege of learning, works and studies hard to gain it. You learn your profession and get paid for your work while you are learning it. You value your knowledge too low. He paid to get his, and he values it, you think too high. No, he does not. You forget when you are figuring on a job that some other master may also make a bid and get the work, and you do not charge for the time spent on the jobs you never get.

In a large paper establishment in Omaha the traveling men were all called in Christmas week, as they are each year, to hear lectures, given by the head of each department of the house on their special work. One salesman asked this question: "Why do we sell this brand of paper at this price, and that brand of paper at a higher price, when they cost the same? I know we do not sell as much of that as we do of this, but I would like to know why." The leader replied, "You have answered the question." They were still for a moment before the boy realized the fact. The small sale of this brand is the reason of its higher selling price. Because of the added cost of carrying it, and the money invested in it, when the time comes to sell it, it cost more than the other one which was easily and rapidly sold. These are thoughts for your line of business.

Another thing, I cannot conceive why you grant time to your customer and do not get pay for it. When a laborer starts to work for you and works five days and a half, he comes into your office and demands his pay, and he expects you to have the cash right down to the penny, and you must have it there, and you do. Where you get it I do not know. Have you got it in your pocket, or do you have to borrow it from the bank, or did your customer for whom you are installing work pay you in advance for a job? Did he? I am not inclined to think he did. You should charge more for labor than you pay for it. It is a poor system in business not to do so. You cannot borrow money from the bank without paying for the use of it, and you should not handle money in labor without pay for the same, as you do for the fixtures on the job. Too many forget that fact, another lack of system in your business. You overlook some of these points and thye are vital to the successful conduct of the business of the master plumber.

I belong to the Ad Club of Omaha. We had a convention there last summer, and one gentleman who was invited to speak to us came from the city of New York, and his speech was but 22 minutes long, and during those 22 minutes he admitted that he was paid by his company $100,000 a year. Several men who addressed that convention admitted during their addresses that their salary was $20,000 a year. Were they paid because of the color of their hair, or physical appearance? Don't you think it. They are paid for the results that they bring about with their advertising skill.

So, salesmanship has not reached its pinnacle yet in any man, but every man has an opportunity to develop to a certain degree in that science or art, whichever you desire to call it. Every master plumber can practice it in his business. He overlooks it too often. What is the condition of your salesroom where you show the wares that you would have a customer buy? What manner have you of showing them to the best advantage? Do you advertise? Step over and observe the drug-store, and shoe-store, and dry-goods store. They decorate the windows and fix their lines of goods up in the most attractive manner. For what purpose? Is it to blow their money? Is it to act smart? No, sir. They attract the purchaser that way, and that is their sole object, to sell the goods, and they succeed. Do you, when a customer comes in to inquire about plumbing-fixtures for a new house, consider some of these essential points of salesmanship? Most of the plumbing-equipment in dwelling-houses is bought by the ladies. Do you size up your customer as a salesman would? Do you try to find out who her neighbors are, and do you know the paying ability of the customer; what is her situation in life; what is the size of the house; who is her particular neighbor; and the particular social state of the neighbor next door, or the little circle which she may be in? Is this a factor in business? It certainly is. You ought to know or ascertain, rapidly, these points. For Mrs. Brown does not want to put in a bath-room today that is out-of-date, or less beautiful, or not as nice as Mrs. Smith's, who put one in last year. Whether this be true or not, this is a question for a salesman to take up. I will cite this instance.

A manager of a plumbing-company stepped into my office the other day and he says, "Mr. Secretary, I landed a daisy job a minute ago." "Where?" "Around the hall." "From whom?" "So-and-so, a big lumber merchant." "What is it?" "An $800 shower." "How did you work it?" "About two weeks ago I met this man, and I got to chatting with him, and I mentioned to him incidentally that so-and-so, one of his neighbors, quite a wealthy man, had a handsome new shower, one he enjoyed very much, and I told him to go over and see it. 'All right, I will.' Next Sunday this man called on his neighbor, saw the new shower, and sized it up, and a week after I called at his office, and said, 'Did you go and see that shower?' 'Yes.' 'What did you think of it?' 'That is a dandy.' 'Wasn't that fine? 'Fine.' I had a catalog under my arm, and I said, 'Here is the kind I put in there,' and he said, 'Joe, how much is that worth?' I told him the price and he said, 'All right, put one in my house.'"

That man may possibly have never thought of putting in a shower, had Joe, this master plumber, not invited him to look at the other one. Why? Because he does not want his neighbor to outshine him.

How often do you size up the lady when she says, "I want a bath-tub, stationary so-and-so." What do you show her, any old thing? Do you size her up, as to whether she can buy a good one? Do you make more on a $60 fixture than you do on a $150 one? I am ashamed of you if you do.

When I was on the road, I never ran away from a big order and went across the street to take a little one. So, the art of salesmanship is necessary for you to cultivate and develop to the greatest possible degree in your business, which is a step in the right way for success, and you will find it a profitable step.

There is a man in the city of Omaha, you all know him, who lands most of the big jobs in that town, who cannot figure a job to save his soul. He has not the ability or education to do so, and he is the wealthiest plumber in the city. He is a salesman. He knows how to sell the job. He is the salesman of the firm. He sells jobs just as a man sells a stock of shoes, cultivators, sewing-machines and threshing-machine engines. That is what you are, or ought to be, as a master plumber, a salesman. Do you develop it? I see very little development in your line, yet there is a wonderful field open for you, and you cannot study it too much. The more you study it, the more fascinating it becomes, and the more profitable it becomes to you, because it is an established fact, without regard to the price, that to please and satisfy the customer, is the best asset any man can gain in his business.

Just a few weeks ago in the forepart of this season, in a certain department store in Nebraska, I was waiting to get an order done up, and observed this little incident:

A lady desired to buy a fur coat. The salesman put a half-dozen coats on her, and she did not like any of them. I noticed he put one coat on her valued at $75. "I do not like it, take it off." Then I saw where he hung it up. Then he tried three or four more coats on her, and went back and got the $75 coat, and put it on her. "How much?" "$125." "How do you like it, mamma?" "I think it lovely." "I will take it."

You realize that your business is not set aside, lifted or pushed away from all the rest of the mercantile world. You, by the nature of your calling, become an absolute necessity to your community, but thereby you are not denied the right of profit in your business. Why you deny yourself, is what I cannot understand, since you are not denied by the people, because of the very fact that they do not know the value of the goods you sell. I do not want a half-dozen bath-rooms, I do not want a half-dozen bath-tubs. If I am able to build a six or seven-room house, I buy only one, and if you will stop to think, more than 60 per cent of the bath-tubs put in in this land today, are the single orders, one or two in a house. I do not mean apartment-houses or hotels. Do I know what that bath-tub is worth? Do I care about $5 to $10 difference, or $20 or $25 or $50? I need it. I must have it. I cannot get along without it. It seems to me, Mr. Salesman, that you have a mighty clear road in front of you to make a sale. When I was on the road I was always tickled to death to hear some one say, "There is a fellow over there who needs the kind of stuff you have got." That was an order right off. I just wrote his name down and found no trouble in selling him.

When I step into your place of business to look at your fixtures it is not a question whether I am going to buy; the question is, what I am going to buy. Now, it is up to you as a salesman to please me, and at the same time please yourself, and benefit your business. So, consider this question for just a moment. The lack of proper confidence in your brother master, which is the result of lack of confidence in your own ability, the right of your profession, your failing to listen or give heed to the words of counsel of another master plumber, are evils in your business that you ought not to continue. For the good of your business drop them, for they are self-inflicted injuries. No one inflicts them upon you but yourself. Confidence in your fellow-master strengthens you in your ability to plead your case and advocate your goods, which will help you to stand firm on your prices. For no man ever came to you and thanked you for a low price you made him on a job when you lost $100 on the job. That is what he wants, and you give up to him. If you do not get what is coming to you, do not blame any one else.

If that master plumber in that other town is not acting according to your judgment as a master plumber ought to act, be mighty careful you are on the right road yourself. He is just as good a fellow as you are. You think you are a cracker-jack, so does he. I believe both of you are right. You are both wrong, when you think wrong of the other fellow, so cut it out.

I say these things to you as one of your customers. Give heed to these points that I have named. Try the experiment of forgetting the petty jealousies, and have confidence in yourself; do not be careless in the manner of employing workmen, and controlling them; of the evil of selling your time at so low a price; quit it. As to the other suggestions I have made, take them home with you to your business, and practice them just a little as an experiment. If you like them, I know you will continue to practice them, and if you do not like them, I know you will quit them, and I leave them with you. The shaping of the success of your business lies with you and not with the other master plumber.

The correction of such evils and the betterment of our business is, and by rights should be, the object and purpose of our associations, and the coming together in convention of all the masters in the state develops a power for good to the craft as a whole, and much profit to the individual.

He Was Sorry for the Boss.

Angry passenger (to conductor who has just enforced a rule)—You'll be sorry for this! I'll see that you are reported to headquarters. I want you to understand, sir, that I am the wife of the president of this company!

Conductor (sympathetically)—Well, mum, I have always understood that even the great and powerful have their sorrows, just like the rest of us.

ANSWERS QUESTIONS CONCERNING SOIL-PIPE AND RAPID FLOW IN WATER-HEATING SYSTEMS.

Editor "Domestic Engineering":—In answer to the inquiries of H. H. H., I might say that the use of 4-in. extra-heavy soil-pipe in place of standard pipe for soil stacks, has the same commendable features that recommend its use underground, or through walls, namely: strength, owing to its thickness; more uniform thickness throughout and less liability to have sand-holes, which are covered up when the pipe is tarred, and show up when the test is put on the pipe in the job. Every plumber who has had occasion to cut the standard pipe, has noticed the unequal thickness of same, due either to the core warping when baked, or sagging when in place ready for the molder's pouring; this warping resulting in the pipe being thick in some places and thin in others. This trouble is partially overcome in the extra-heavy pipe. Standard pipe was tight (perhaps) as long as no water-test was applied, but the water-test is pretty hard treatment for a line of soil, waste and vent piping, and shows up the defective material pretty effectually. Some localities allow standard pipe to be used for the stack through roof after the highest waste or soil opening has been left, but it looks better to me to make the entire soil-pipe extra-heavy, and avoid confusion as to where the extra-heavy terminates and the standard shall start, and also to avoid the carrying in stock of the two grades of pipe and fittings.

In framing the Galva (Ill.) ordinance, it is evident that the commercial description of galvanized pipe was considered sufficient. One and one-quarter in. and smaller pipe is called butt-welded, and is subjected to a hydraulic test of 300 lb.; 1½ in. and larger pipe is called lap-welded, and is given a hydraulic test of 500 lb. All pipe is tested at the pipe mills before being shipped. There is where the "500 lb." referred to comes in. The above applies to what is called commercial standard pipe, and it is good practice not to subject this pipe to higher than 100-lb working pressure, thus leaving a factor of safety. For higher working pressures, extra-strong and double extra-strong are made. The factor of safety allowed on the standard pipe referred to above, allows for a deterioration of the structures of the metal by corrosion, and by expansion and contraction. I do not think that H. H. H. really thought for an instant that the piping would ever be expected to stand a very small percentage of the 500-lb. pressure referred to in the ordinance.

Defining the term "revent," I might say that various localities have different names for the same piping, revent, back-vent, or back-air pipe, all meaning the same pipe. It is the pipe connected to the top part of a trap, and either joined to the main vent-pipe above the waste from the highest fixture, or carried independently through the roof. It might be well to define the term "main vent pipe." The soil-stack in a building remains the main soil-stack until it receives the discharge from the highest water-closet, and from this point up to and through the roof it becomes the "main vent stack" or "main vent pipe," as you prefer. And again, pipes receiving the discharge from baths, lavatories, sinks, etc., are called "waste" pipes. The October 21st issue of "Domestic Engineering" treats in a clear manner of "Vents and Revents," and no doubt H. H. H. will get his eye on this article.

Regarding the closed or pressure system of hot-water heating, and by the way, I hardly see the reason for speaking of a water heating job as a "hot" water heating system, as very few people are in the habit of heating their buildings with "cold" water, and you never hear a steam job spoken of as a "hot" steam job; I hardly think H. H. H. expresses himself as he really means. The motive power or force, in either an open or closed system of water heating, is the same, namely, the difference in temperature in the flow and return piping. The water in the return pipe being cooler, naturally is heavier and sinks, thus displacing the water being heated in the boiler, which being lighter, naturally ascends. This becomes a "continuous performance" as it were, and circulation of water through the piping is the natural consequence. H. H. H. need not go to the trouble of pumping any pressure on the job, just plug the expansion-tank openings, and fire up. He will be able to get almost any old pressure he wants, but I would advise him not to go beyond 20 lb., as above that, cast-iron boilers are hardly safe. The closed systems of water heating have some form of safety or relief device, which automatically relieves the pressure when it reaches a certain point, usually 10-lb. gage. That water boils at 212 deg. F. at sea level, is a recognized fact. When water boils in a receptacle, such as a boiler in this case, it forms small bubbles which on breaking form steam. This is all right in a steam job, because space is provided in the boiler for steam to collect, and the piping is also ready to receive it, but with a closed job of water heating, after the expansion-tank has been taxed to its capacity, the water has no place to go except through the piping, and until it reaches that pressure at which the safety device relieves it, the water continues to rise both in temperature and pressure, and circulates rapidly through the entire system. In a closed system of water heating you get the same temperatures as that of steam at corresponding pressures, namely: 215 deg. in the water, same as temperature of 1 lb. of steam; 227 deg. water, same as steam at 5-lb. gage-pressure, etc. This allows for smaller piping and a slight reduction in the amount of radiation required. I believe that most of the makers of safety devices for closed systems advise about 10 to 15 per cent reduction in the radiation, and smaller piping, but insist on the boiler being the same capacity as that required for an open tank job. I fear I have taken up too much of your valuable time, but it has been my endeavor to try and make this as clear as possible to H. H. H.

Moline, Ill. Thomas Tait.

THE SLIP-NIPPLE VERSUS THE SCREW-NIPPLE IN RADIATOR AND BOILER CONSTRUCTION.

Editor "Domestic Engineering":—Some time ago I saw a discussion in your journal concerning the relative value of the slip-nipple and the screw-nipple in radiator and boiler-construction. It has been my experience that the slip-nipple is the ideal construction for both radiators and boilers.

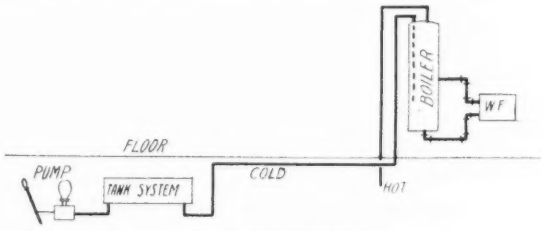
On radiators the slip-nipple stands up fully as well as the screw-nipple and causes fewer leaks. All the slip-nipple radiators I have installed are in perfect condition and none of them have given out or required repairs.

Slip-nipple boilers are put together with greater ease than the screw-nipple type, and my experience leads me to believe that they have fewer leaks and will last just as long as screw-nipple boilers. I would, however, like to hear what other heating contractors think about this matter.

Warrensburg, Mo. Oll Miller.

HOW CAN A NOISY WATER-TANK BE QUIETED?

Editor "Domestic Engineering":—I have a hot-water system in a building and the hot-water tank makes a



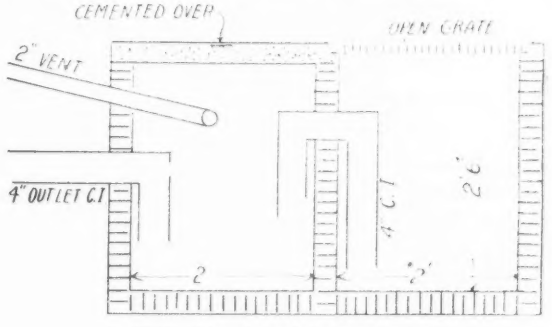
A Noisy Water System.

cracking and rumbling noise nearly all the time. Would like to have some of your readers tell me how to prevent this annoyance.

Carbondale, Pa. F. E.

DESIGN FOR HOME-MADE GARAGE OR SAND-TRAP WANTED.

Editor "Domestic Engineering":—I would greatly appreciate it if one of the many readers of your journal would give me a sketch of a practical home-made garage or sand-trap. I show herewith a sketch of my idea. The



Sketch of Home-Made Garage-Trap.

way we have been installing them here is to make them of brick, plastered on the inside with ¼ in. of cement, the trap being 2 ft. square.

I am willing and anxious to learn if any one has some good suggestion for such a trap. Please state size public garage should be

"Wichita."

Sweet Dreams.

Tramp—Yes, mum; I've saw better days. Only a week ago I were worth $20,000.

Sympathetic Lady—Poor man. How did you lose it?

Tramp—The brakeman woke me up.

HOW TO GET SPECIFIED PLUMBING FIXTURES INSTALLED.

Editor "Domestic Engineering":—If certain plumbing fixtures are specified for a job some one ought to see to it that they are put in. This can not be left altogether to the plumber or architects (unless you make it an object for them), the manufacturers or jobbers must do their part. Any system put into effect that will insure of specified goods being put in, would be welcomed by the master plumbers, at least the better class, the men who put in what they have figured on. Of course, there would be a holler from the fellow that figured on a $20 closet and put in one, or always tries to put in one, that costs $2 or $3 less. There are a lot of these fellows figuring against you and me, who figure on the square. This also is one of the reasons why there is so much of a variation in figures. You figure as specified; the other fellow figures any old thing and takes a chance on its passing, and in nine times out of every ten his cheap material does pass, as most of the owners are not posted on the different grades of material, nor are all the architects dead sure that the goods they have specified have been put in; that is they cannot always tell by looking at the goods; they could ask the jobber or manufacturer handling these particular goods, but most of them do not go to the trouble of doing this; a lot of them leave it to the plumber and depend on him to use the goods as specified, but as I have said before a lot of the plumbers take advantage of this and use an inferior article or goods of a different make, goods that they can make more money on. Jobbers and manufacturers should get busy and devise some scheme whereby you can rest assured that if their goods are specified they will be used. The better class of plumbers (and they are the ones that you are after and whose trade you want) are with you.

Milwaukee, Wis. One Estimator.

THIS IS ONLY ONE AMONG MANY.

Editor "Domestic Engineering":—Kindly send us seven reprints of the "First-Aid-to-the-Injured" postal-card cartoon published in last week's issue of your valuable journal.

We wish at this time to congratulate you on this cartoon service in your publication. This feature alone is worth the subscription price of your journal, and it is undoubtedly doing great good in correcting the most conspicuous evil in the plumbing business.

La Crosse, Wis. Baker & Niebuhr.
By Henry H. Niebuhr, Sec'y.

HERE'S ANOTHER FROM PORTO RICO.

Editor "Domestic Engineering":—I wish to tell you that I have found your editorials and the many articles along lines of business cost most interesting. I hope to see more successful masters open their hearts and books to your readers as "The Squire" has done. True accounts of this kind can only go to open the eyes of the trade and kidnap the napping from the clutches of the never-napping sheriff.

San Juan, Porto Rico. Charles W. Brooks.

Mr. Ferguson (who has been ready to start to the theatre an hour or more)—Laura, if you had to take a train for heaven you would get left.

Mrs. Ferguson (buttoning her gloves)—I don't know whether I would or not, but if I did catch it I know I would have to travel without any escort.

LEGAL DECISIONS

PECULIARITIES AND DISADVANTAGES IN MECHANIC'S LIEN LAW.

In a mechanic's lien case where one of the claims was for the furnishing and installing of plumbing in a building, the Court of Appeals of New York points out some serious disadvantages in the law of that state. It says, Jackson vs. Egan, 91 Northwestern Reporter, 211, that the law provides that: "When a laborer or a materialman shall perform labor or furnish materials for an improvement of real property for which he is entitled to a mechanic's lien, the amount due to him shall be paid out of the proceeds of the sale of such property under any judgment rendered pursuant to this title, in the order of priority of his lien, before any part of such proceeds is paid to a contractor or sub-contractor." It is also enacted that the term "contractor," as used in the statute, means a person who enters into a contract with the owner of real property for the improvement thereof, and that a "materialman" means any person other than a contractor who furnishes material for such improvement, and that the term "improvement" includes "the erection, alteration, or repair of any structure upon, connected with, or beneath the surface of, any real property and any work done upon such property, or materials furnished for its permanent improvement."

It has been held that under the statute a materialman is entitled to preference over one who furnishes both material and labor, and is therefore a sub-contractor, though the claim of the latter was filed first in point of time. It will also be seen that a person who furnishes material for the improvement of real property is not necessarily a materialman to whom preference in payment is awarded. To come within the definition of the statute, he must not only furnish materials, but he must not be a contractor, as also defined by the statute. By the express language of the statute, any one who contracts directly with the owner, though it be only to furnish materials, is a contractor.

While this view worked out justice in this case, the court appreciates that the construction which denies the materialman a preference which he would have obtained had he furnished the material to a contractor or sub-contractor, instead of to the owner, may seem strange and unnatural.

If it should be asked, why deny the man who furnishes material under a contract with the owner the same rights he would possess if he contracted with a contractor, it may be answered by another query: Why should the claim of a man who furnishes material be subordinate to the claim of other parties who furnish material, simply because the former agrees, in addition to furnishing the material, to install it or use it in the building? The statute presents anomalies and incongruities with which it is very difficult to deal. The rule established in the prior decision above referred to operates to the detriment of certain building trades, such as those of the plumber, the furnisher of heating or lighting apparatus, and others, in which the material is supplied and the work of installing done by the same party. Still, the court finds no way to avoid that result. If there is any change to be made in the law, it must be by the action of the legislature in amending or recasting the statute.

TWO REASONS WHY SUB-CONTRACTORS ARE NOT ENTITLED TO LIEN.

An owner of two buildings, who received a "violation" notice that the soil-line from water-closets in corner house was extended and connected to house-drain of adjoining premises, which was contrary to permit, and that: "You are required to provide separate extra-heavy cast-iron house-drain for each house," contracted with a Mrs. Z., who was doing business as a "tinsmith and plumber," for the work specified in the notice at the cost of $240. Mrs. Z sublet the work to a firm at a cost of $220.

In an action by the firm to enforce a mechanic's lien against the property, the Second Appellate Division of the Supreme Court of New York says, Wexler vs. Rust, 128 New York Supplement, 977, that the plaintiffs did not put in "separate extra-heavy cast-iron house-drains for each house." When they started in with their work, they found one of the houses connected with a sewer in the street by an earthenware drain, to which was connected the drain from the other house. They disconnected the drain from the one house and connected that house with the sewer by an iron drain; but they left the original earthenware drain undisturbed, so that, as a result of their work, one house was connected with the sewer by an earthenware drain, and the other house by a cast-iron drain. They claimed full performance of their contract with Mrs. Z., on the ground that such contract called on them, not to put in two separate sewers, but simply to remove "the violation" which had been filed against the property, and that said "violation" had been removed when they finished the work. But Mrs. Z. admitted that the contract of the owner with her for the work to be done was made with relation to "two new sewers"; and, if that was so, then, though the plaintiffs may have performed their contract with Mrs. Z., they had not performed her contract with the property-owner; for they have put in but one new sewer, and but one separate heavy cast-iron drain. Under these circumstances, nothing became due to Mrs. Z. to which the plaintiffs' claim of lien could attach.

Furthermore, Mrs. Z., not being a "licensed plumber," could not recover under her contract, though she had performed it, and consequently there was nothing due under said contract to which a lien in favor of the plaintiffs could attach. The general rule is that a sub-contractor, seeking to enforce a mechanic's lien against real property, must show that there is a balance due from the owner to the original contractor to which the lien may attach. It would appear, therefore, where, because of the inhibition of the statute, nothing could become due under the original contract, neither could there be any balance unpaid thereunder to which might attach a mechanic's lien in favor of a sub-contractor.

Now or Never.

Miss—Is it right for a girl to kiss a man before she marries him?

Madam—It may not be right, but it is a good plan if she cares for kisses.—Truth.

"A grave-digger buried a man named Button and brought in the following bill to his widow:

"'To making one Button hole, $5.'"

THE METAL MARKET

LOWER PRICES FOR STEEL-MAKING IRON.

A decline of 25 cents a ton is noted in the price of Bessemer iron in Pittsburgh. This makes a new low point in this year's operations. The pig-iron works have been very quiet, notteably so, in the East. A great many furnaces, however, are shipping material faster than it is being produced, and stocks all over the country are down to a low point. Foundry interests are also urging the blast furnaces to hasten shipments. A New Jersey stove interest purchased 1500 tons of Virginia iron to be delivered at furnace. The buying of cars by the railroads has been hailed with delight by the iron and steel trade. Numerous car orders have been closed with many more in prospect. The largest single contract for bridge work placed for a long time was for the Hell Gate Bridge in New York, calling for approximately 40,000 tons of structural steel shapes. This was given by the Pennsylvania and New York, New Haven & Hartford railroads jointly. Prices are as follows

No. Southern foundry, Birmingham	$10.50
No. 1 Northern foundry, New York	$15.25 to $15.50
No. 2X Northern foundry, New York	14.75 to 15.25
No. 2 plain, Northern foundry, New York	14.50 to 14.75
No. 2 Northern foundry, Chicago	14.35 to 14.50

OLD IRON.

The rejections by rolling mills continue, and the disappointing fact of the situation is that sellers grant the concessions demanded. Steel works seem to be plentifully supplied with material, either on hand or on contract, and are not purchasers. Cast scrap is very quiet. Foundries are only taking carload lots. Quotations for New York delivery are as follows:

No. 1 yard wrought, long	$10.25 to $10.75
No. 1 yard wrought, short	9.25 to 9.75
Heavy-melting steel scrap	9.25 to 9.50
Machinery cast	10.00 to 10.50
Wrought pipes and tubes	8.50 to 9.00
Malleable castings	9.75 to 10.25
Wrought turnings	5.75 to 6.25
Cast borings	5.50 to 6.00
Stove plate	7.75 to 8.25
Light iron	3.75 to 4.25

SPELTER.

The scarcity of spelter continued, and prices have advanced in New York 6.35 cents and even higher has been paid, while in the West there is plenty of spelter available at 6.20 cents.

LEAD.

Independent interests are underselling the American Smelting & Refining Co. in the West, quoting 4.12½ cents. In New York, however, the market is firm, and the leading producer is taking practically all of the West at 4.25 cents.

TIN.

The statistics of tin compiled Nov. 1 by the secretary of the New York Metal Exchange are favorable to the sellers of metal, showing as they did, a visible supply throughout the world 4,000 tons less than a year ago. Prices moved within narrow limits during the week, but the tendency has been toward lower levels. Pig tin is now selling in 5-ton lots New York at 41.62½ cents. Stocks in New York are in the hands of a few strong interests.

LIGHT EXPORTS OF COPPER.

Exports of copper during October were disappointing, amounting to less than 22,000 tons. This was largely the result of the disturbed political conditions in France and Germany during September. Advice from foreign buyers is to the effect that the melters abroad are using as much metal as ever, and in consequence the November exports are expected to be heavy. Much copper has already been purchased to be exported this month. Copper for immediate delivery is somewhat scarce, but prices are a shade lower. Electrolytic is offered at 12.37½ cents and Lake at 12.50 cents.

CONTRACTS RECENTLY AWARDED.

Kendallville, Ind.—Lee & Son have secured the contract for the installation of a heating plant in the Lutheran Church in this city. The consideration is $800.

Scranton, Pa.—Gaylor & Butler, in this city, have been awarded the contract for the installation of a new heating plant in the Baptist church at Carbondale, Pa.

Hamilton, Mo.—Parrish & Son have been awarded the contract for the installation of a pneumatic water-supply system in the city hall in this city.

Little Rock, Ark.—The Pettit-Galloway Co. is doing a very good business this season. The following are among the most important contracts recently secured: Heating the Masonic Temple, the Donaghey Bldg., the Greystone Hotel, the Y. W. C. A. Bldg. and the Paschall flat building, and the residences of Mrs. W. H. Eagle, G. G. Wood, E. F. Reaves, Moorhead Wright, Mrs. W. H. Garanflo and Mrs. T. B. McQuithy.

Huntsville, Tex.—Collins Bros., of Houston, Tex., have the contract for installing the plumbing in the new prison laundry, now about completed. The laundry will be well equipped with modern machinery and up-to-date in every way. The plumbing at the Wynne state farm and at Camp Goree, both near Huntsville, and for several state farms in the cane belt region, will be installed by the Huntsville Plumbing & Tinning Co.

Carlinville, Ill.—D. E. Sexton has been awarded the contract for installing a new heating plant in the county alms-house. The price is $472. The old plant has outlived its usefulness and is not equal to the demands made upon it.

Boise, Idaho.—The Idaho Plumbing & Hardware Co. has been given the contract to furnish and install heating and plumbing systems in the office-building of the government reclamation service here. The amount of the contracts is reported as $2,999.

A locomotive engineer who had been many years in the service was notified that he must report to a certain doctor to have his sight tested. The doctor lived in a house facing a large park, and was accustomed to say on occasions of sight testing, "Look over there and tell me what you can see." When the engineer learned that his sight was to be tested he arranged with his son to take his bicycle half a mile into the park and be oiling it. Here is what, according to an exchange, occurred on this interesting occasion.

Doctor: "What do you see?"

Engineer: "I see a young man stooping beside his bicycle."

"Do you?" asked the doctor. "I don't see anything at all."

"Nonsense," said the engineer, "why, he is oiling it."

The doctor took up a pair of field glasses and plainly saw the same.

"Magnificent sight!" he said.

The engineer still holds the lever on his old run.

THE HOFFMAN HEATER CO. OPENS CHICAGO OFFICE AND SHOW-ROOM.

The Hoffman Heater Co., Lorain, O., has just opened an attractive office and show-room at 189 N. Dearborn street, Chicago, in charge of H. D. McDonald, an expert in the hot-water heater line.

WILL MANUFACTURE STEAM SPECIALTIES.

The Shields Steam Specialty Co., Louisville, Ky., has been incorporated with a capital of $10,000 to manufacture steam specialties. The incorporators are George W. Shields, A. J. Breedlove and T. Q. Munce.

AMERICAN DISTRICT STEAM CO. MOVES ITS GENERAL OFFICES.

The American District Steam Co. has just announced the removal of its general offices from Lockport, N. Y., to its new works at North Tonawanda, N. Y. The removal took place in the middle of October.

WILL MAKE STEEL FITTINGS FOR WATER AND STEAM PIPING.

The Evans Fitting Co., Camden, N. J., has been incorporated with a capital of $50,000 to manufacture steel fittings for hydraulic and steam piping. The incorporators are: F. R. Hansell, J. A. MacPeak and I. C. Clow.

GURNEY HEATER MFG. CO'S. NEW PLANT NEARING COMPLETION.

The new plant of the Gurney Heater Mfg. Co., at South Framingham, Mass., is practically completed, so far as the erection of the buildings is concerned, and the work of putting the machinery in place will start soon. It is expected that the factory will be in full operation by mid-winter or early next spring.

THE CRAIG FOUNDRY CO. IN NEW QUARTERS.

The Craig Foundry Co., of Canton, O., has rented the Bucyrus, O., foundry, south of that city, and has taken possession. The Craig company is doing a general foundry business, and will make a specialty of hot-air registers and radiators for hot-water and steam heating. The company will start in a conservative way and increase its business as necessity demands.

PLAN TO REORGANIZE THE IRON CLAD MFG. CO.

Herman A. Metz stated last week to the attorneys for the creditors of the Iron Clad Mfg. Co., 204-206 Varet St., Brooklyn, N. Y., that he was willing to finance and reorganize this company, and, if given sufficient time, put it on an earning basis and pay the creditors in full. This announcement from Mr. Metz came as a surprise to the creditors' attorneys. The company's liabilities total about $650,000, of which about $390,000 are secured. The liabilities include $150,000 owed to the Philadelphia Warehouse Co., the largest creditor; $40,000 to the Western National Bank of Philadelphia; $50,000 to Brown Bros., and about $118,000 to the McKeesport Tin Plate Co. These large accounts are secured by the bonds of the company. Mr. Metz added, however, that he would not think of taking over the Iron Clad Mfg. Co. unless the Barrel Co. was made a part of the reorganized company.

SANITARY DRINKING FOUNTAIN COMPANY INCORPORATED AT WAUSAU, WIS.

A company which will make a specialty of sanitary drinking fountains has been organized at Wausau, Wis., and the articles of incorporation filed. The new concern will be known as the Hamrick-Tobey Co., and is incorporated with a $5,000 capital. The incorporators are: H. E. Smith, Alex Wilson and Brayton Smith. The company will take over the business of Hamrick & Tobey, who have been making the fountains for the past two years.

MASTER BOILER MAKERS' ASSOCIATION FIXES DATE FOR NEXT ANNUAL CONVENTION.

At a meeting of the executive committee of the Master Boiler Makers' Association, held at the Fort Pitt Hotel in Pittsburgh on Saturday, October 28th, it was unanimously decided to hold the sixth annual convention of this association in Pittsburgh, May 14-17, 1912, with headquarters at the Fort Pitt Hotel. George N. Riley, of the National Tube Co., was made chairman of the general committee of arrangements, and J. Rogers Flannery, of the Flannery Bolt Co., secretary and treasurer of this committee.

PERSONAL MENTION.

F. T. Rawley, Canadian representative of the Honeywell Heating Specialty Co., Wabash, Ind., was in Chicago this week on his return trip to Montreal. Mr. Rawley's genial personality has won him many friends in the heating trade in the Dominion, and he reports great progress for the Honeywell regulators and generators in Canada, where they are meeting with a most gratifying appreciation under varying climatic conditions throughout the country, even to the uttermost parts of the great Northwest.

THE "SPENCE" WATER-HEATERS.

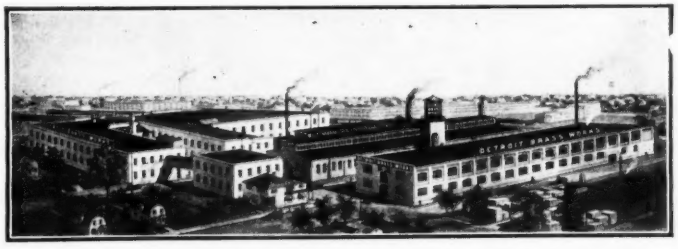
"The boiler or heater is the mainspring of a heating system," says the Kellogg-Mackay Co., Chicago, in its new catalog-booklet on the "Spence" water-heaters, and then forthwith the company presents illustrated arguments to the effect that the "Spence" heater is the mainspring to be considered. These heaters are of round, horizontal, sectional construction, with ample ash-pit and supplied with high or low base as desired. The fire-chamber is like our school-definition of an island "entirely surrounded by water." The inner or fire-surface is heavily corrugated to provide an abundant heating area, this construction adding to the strength of the fire-pot and allowing free circulation up to the outer edge of the fire. The enplacement of the sections is such as to give an advantageous staggered fire-travel. The booklet will interest you. You can obtain it upon request. Mention "Domestic Engineering" when you write.

THE "INVENTORS' OUTLOOK."

Inventors in this country have little enough protection when their patents are secured. Their actual security depends largely on the amount of capital they have behind them. An aggressive trade-journal (if inventing may be termed a trade) published in the interests of inventors and covering in a broad spirit all inventors' problems, is the imperative need of the day. The need is going to be met by the "Inventors' Outlook," its prospective publishers tell us. Their announcement of the fact details a most comprehensive field of activity. It will be published in the near future. You can register for this new monthly for a year for one dollar by application to the "Inventors' Outlook," Room 18, Provident Savings Bank Bldg., Washington, D. C.

THE DETROIT BRASS WORKS, DETROIT, MICH.

The large plant of the Detroit Brass Works, Detroit, Mich., is shown in a most attractive manner in the accompanying illustration. This progressive concern was founded in 1891 by W. A. Fraser and Thomas Fraser. It started business in a small rented building with a force of only 12 men and was a success from the start. A few years later Charles Dorn purchased Thomas Fraser's interest and the business continued to grow until



The Large Plant of the Detroit Brass Works, Detroit, Mich.

it became necessary to move into a larger building in 1899. This building was located on the site of the present plant. From time to time new buildings have been added to take care of the constantly growing business until the present plant has been evolved. In 1910 W. A. Fraser died and the present organization was formed with the following officers: A. W. Fussey, president; A. G. Hanson, vice-president; H. C. Hall, secretary; E. B. Whitcomb, treasurer. The company now employs 500 men.

THE REFLEX AIR HEATER TO BE MANUFACTURED IN CADIZ, O.

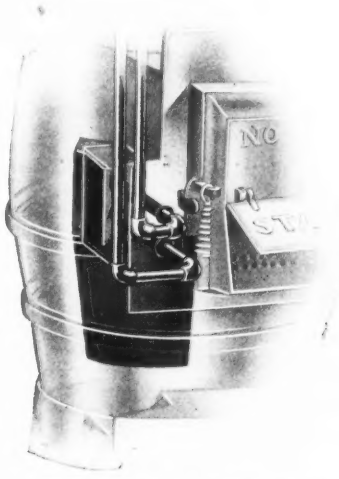
The Reflex Air Heater, designed and constructed by W. F. Gammeter, of Cadiz, O., will soon be manufactured in that city by a company to be organized for this purpose. Mr. Gammeter has recently purchased the old building of the Cadiz Telephone Co. and will remodel it for a manufacturing plant.

THE McDONALD POWER-PUMP.

The A. Y. McDonald Mfg. Co., Dubuque, Ia., is experiencing considerable success with its new power-pump, which is designed to meet the requirements of the trade for a compact substantial inexpensive apparatus, suitable for all purposes. It is specially adapted for use with pneumatic pressure-systems, and is equipped with an intake air-valve, which positively supplies air to the tank so that an independent air-pump is not needed. The cylinder and valve-chamber are in a one-piece casting, with the valves clustered above the cylinder, so that the pump cannot leak back and the cylinder will not lose its priming. The valves are of cast brass with cast-brass seats, and the piston-rod is brass-covered, guided by brass bushings, which effectively maintain alignment, and minimize friction and wear at the stuffing-box. The pump, pulleys and gears are mounted on an exceedingly strong cast-iron base. The company is issuing a neat leaflet which illustrates and describes the new McDonald pump in detail. It can be secured by mentioning "Domestic Engineering."

THE NEW GIBLIN FURNACE WATER-FRONT.

Giblin & Co., Utica, N. Y., has just issued to the trade a leaflet illustrating and describing a new furnace water-front recently designed by them. It is placed in the fire-pot in direct contact with the fuel, between the mouth-piece of the feed-section and the mouth-piece of the ash-pit. The manufacturers claim that as it is at this point that the greatest damage usually results to the furnace-castings, a Giblin furnace water-front contributes to the life of the furnace by preserving them. The water-



The Giblin Furnace Water-Front.

front is easily inserted through the feed-door after the furnace is erected, without disturbance of the setting. The interior construction of the casting is such that the cold water is forced, after it enters the casting, to pass to the bottom and then start over and upwards on the other side to the hot-water outlet. The leaflet explains other interesting details of the construction, operation and efficiency of this new Giblin device, and a copy of it can be obtained upon request by application to the company. When you write, mention "Domestic Engineering."

CELLULOID CLOSET-SEATS AND COVERS.

The Celluvarno Co., 44 E. Kinney St., Newark, N. J., is distributing to the trade a 24-page pamphlet illustrating and describing sanitary specialties under the trade-mark of "Celluvarno." Celluvarno is a celuloid composition which is claimed by the manufacturers to be seamless, non-porous, non-absorbent, non-crazing and acid-resistant. The products made from this material are water-closet seats, covers and tanks, auxiliary fittings being also supplied, such as tank-pulls, medicine-cabinets, mirror-frames, bath-seats and stools, and towel-bars. The company makes a specialty of treating woodwork supplied by jobbers in "celluvarno" finish. The pamphlet contains illustrations of the products, their application, and the finished installation, and can be obtained upon request from the Celluvarno Co. In writing mention "Domestic Engineering."

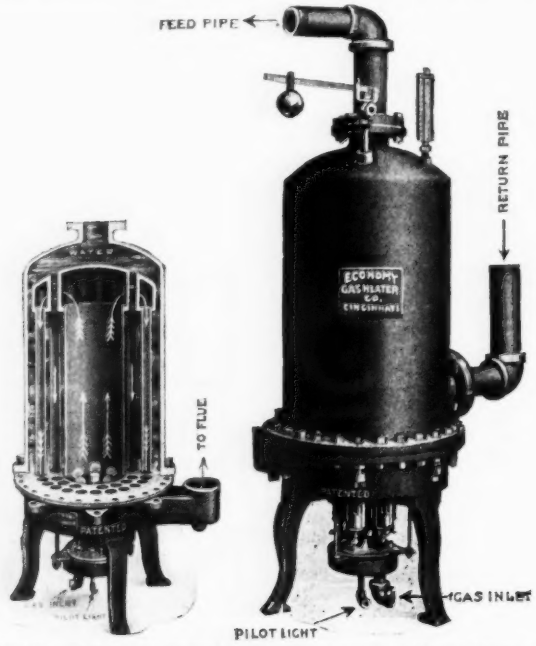
"THE PASSING OF THE DRINKING CUP."

The John Douglas Co., Cincinnati, O., has issued an excellent booklet entitled "The Passing of the Drinking-Cup." How far the drinking-cup has given way in deference to public opinion, is shown by reference to the many types presented in the Douglas booklet. It is in fact an interesting study as to the rapid changes that can take place as a result of definite public opinion and concerted effort.

Ten years ago the John Douglas Co. would have wasted its money in publishing a handsome production of this type. Today it is missionary effort, which will bring about substantial commercial profits. The illustrations show many interesting types of drinking-fountains, suitable to all conditions, the most important of which are the "Colonial," "Mackinac," "Yosemite" and "Arctic." Those interested in drinking-fountain installation will find this booklet helpful in suggesting to customers the installation best suited to their requirements. Copy of the booklet can be obtained by application to the John Douglas Co. When you write mention "Domestic Engineering."

THE "ECONOMY" GAS WATER-HEATER.

The chief constructive feature of the "Economy" gas water-heater is provision for an upward and downward gas-travel. This is clearly indicated in the interior illustration. The heating surface is entirely of copper and brass, both possessing high conductivity. The heater can be operated with or without thermostatic control, the manufacturers strongly recommending its adoption on



Interior and Exterior Views of the "Economy" Gas Water-Heater.

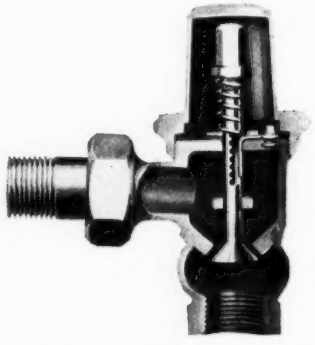
account of economy obtained through temperature-regulation. These heaters are adapted for all types of residences and for instantaneous domestic hot-water supply. The manufacturers, The Economy Gas Heater Co., 633 Walnut St., Cincinnati, O., will be pleased to forward special descriptive literature to all those interested. Mention "Domestic Engineering" when writing.

THE MORGAN-CLARK VACUUM-HEATING AND FLUSHING SYSTEM.

"Nature abhors a vacuum," some one said. Some one else suggested that the reason was because it made Nature work overtime in filling it up. Everything costs money, vacuum included, and there is nothing that is destroyed so easily, when once obtained. Any apparatus, therefore, which proves to be effective in the maintaining of a vacuum when it is desired and controlling the degree of vacuum required, will meet with the earnest consideration of those interested in vacuum-heating.

The Morgan-Clark System Co., 380 Exchange St., Rochester, N. Y., is marketing a special vacuum-heating and flushing system, which is fully described and illustrated in an interesting booklet now being issued to the heating engineers of the country. The Morgan-Clark vacuum-valve, with automatic movable by-pass, is the chief factor in the system's efficiency. Its construction is such that it permits of regulation while in operation from the outside. There is no need of disconnecting for regulating purposes, and therefore there is no danger of air being admitted to any part of the system during regulation, air which would cool it down or reduce the vacuum obtained. Such reduction in vacuum-heating systems means additional cost in heat-units to restore the temperature, and causes the vacuum-pump to increase its speed beyond the economical point of efficiency. The illustration shows this valve in section and placed as when operating with the flushing system. It will be noticed that the valve faces away from the drops below its seat. Its peculiar shape and liberal opening reduce the probability of sticking or clogging in operation to a minimum. The tension-spring shown is made from music-wire, temper-rolled and zinc-coated by a special cold process, which does not destroy the temper of the spring. Steam-heat and moisture do not affect these springs, and they are rust-proof.

The valve is always used in connection with a controller, located at the proper point in each riser. The function of the controller is to balance the vacuum and prevent short-circuiting of the steam-circulation in radiators or coils nearest the vacuum-pump, where the vacuum is greatest. Without such control the vacuum might fall so low that some valve might not open, allowing that part of the system to fill up with condensation. The construction of the controller is similar to that of the



Interior View of the Morgan-Clark Vacuum Valve.

valve, but it has a larger area and capacity, proportionate to the riser-load for which it is designed.

In operation the valve and controller are normally closed by the tension-spring, but they open as required proportionately to the amount of condensation in the system. Controller and valve act, therefore, in harmony in maintaining the desired vacuum, and in the balancing of vacuum-conditions the valve closes before all the water is discharged above the valve-seat, so that an effective water-seal is always maintained.

The booklet gives an interesting illustration of the evils of back-pressure, which the manufacturers claim is done away with in this system, and a concise description of the Morgan-Clark blow-off, or flushing system. This flushing arrangement is specially necessary where engine cylinder oil is used. The apparatus is constructed from brass and bronze, and special care is taken in the machining of its various parts. Copy of the booklet and further information can be obtained from the Morgan-Clark System Co. When you write, mention "Domestic Engineering."

Notice to the Conductor.

Chicago Passenger—I say, conductor, did you notice my ticket?

Conductor—Um! I don't remember it, sir.

"My ticket is for St. Louis."

"Well?"

"Well, I don't want you to forget to stop there, that's all."

Sheridan, Wyo.—Theodore Harker has recently opened a plumbing establishment in the Helvey block, and intends to carry the largest stock of plumbing fixtures to be found in a retail store in Wyoming.

PACIFIC COAST LETTER

San Francisco.

Conditions in the local plumbing business are gradually improving, though it is difficult to detect any material change from week to week. Just at present there is no great volume of new work coming out, but this is causing no anxiety, as the trade feels well assured of the outlook, and all the shops are well occupied with contracts taken some time ago. In fact, there are a good many large contracts on the books on which work has hardly been started, and with a fairly steady run of small jobs the plumbers are well satisfied. While they all look for a gradual increase of activity with the approach of the exposition, they neither expect nor desire any sudden acceleration of business. Such a condition existed in the latter part of 1906 and 1907, and caused the installation of more equipment than the market really warranted, aside from an influx of irresponsible contractors. The trade has now pretty fully recovered from this condition, with the elimination of weak concerns, and the volume of work is beginning to catch up with the capacity of the equipment. After the experience of former years, the last thing to be desired is another period of inflation involving a succeeding season of liquidation.

Regarding the observance of the old rule of the master plumbers of taking no contracts except from the owners direct, local plumbers state that there is really no longer any pretense of following this practice. The necessity for such a rule, they say, was almost entirely overcome by the passage of the new mechanics' lien law by the last state legislature. Before that time many losses had been suffered through the action of fraudulent or incompetent general contractors, but under the present law the sub-contractor is so well protected that the precaution of signing contracts with the owners themselves is no longer necessary. Of course, a good many owners prefer to look after the contracts for this part of the work themselves, but on the larger class of buildings the sub-contracting system is quite commonly followed.

During the last few years many eastern manufacturers who had formerly paid little attention to the Coast territory have opened offices in San Francisco to look after the business throughout this region, with uniformly beneficial results. In some cases large distributing stations have been established, from which goods could be shipped at short notice as desired, while in other cases only offices have been maintained, the jobbers being depended on to carry stock ahead of trade requirements; both methods have served to strengthen the manufacturer's position in this market. With the certainty of rapidly increasing demands throughout the Coast, and the prospect of cheap and rapid transportation via the Panama Canal, many manufacturers who have not formerly had their own offices here are taking steps to establish them, and it is expected that many branch offices, and some warehouses, will be opened within the next year.

The John G. Sutton Co. has been awarded the contract for the installation of the electric, water, steam-heating, circulating hot-water system and plumbing for a five-story hotel building to be erected at Seventh and Mission streets.

Los Angeles.

The great bulk of the work in this city and vicinity, as usual, is on small residence buildings, but more apartment-house jobs have come out this fall than ever before, and apparently this class of work is destined to continue as an important feature. Among the jobs for which contracts will be let shortly are a three-story apartment-house for Jacob Gold, at Twenty-seventh near Figueroa street. It will contain 250 rooms, divided into apartments of two and three rooms each, with private baths, etc. Work will soon be started on the Clark Memorial Home for the Y. W. C. A., on Loma drive near Sixth street. It will contain 120 dormitory rooms and fifteen washrooms, and each sleeping room will be provided with lavatory and toilet. Plans for an unusually fine residence job are being drawn by Architect J. M. Haenke. The scheme includes four buildings, to cost complete about $250,000. Each building will contain three tiled bathrooms, and the group will have a central heating, ventilating, vaccum-cleaning and refrigerating plant. Bids for a heating-plant at the county hospital, received this week, were all rejected, and now bids will be called for under different specifications.

The Board of Supervisors will receive bids November 27th for the furnishing and installation of a heating plant, vacuum-cleaner sweeping plant, ice plant and ventilating appliances for the county hospital at Mission and Daly streets.

Architects Parkinson & Bergstrom, 1035 Security Bldg., have been requested by the board of education to complete plans for the administration building of the Manual Arts high-school, and have them ready to submit to contractors for figures in two weeks.

Architects Edelman & Barnett, Blanchard Bldg., are completing plans and will be ready for bids shortly, on the general contract for the 11-story basement and sub-basement, class A office-building to be erected at the northwest corner of Fourth and Hill streets for the Black Fireproof Building Co. The new building is estimated to cost $450,000.

M. S. Yeager & Co., 307 L. A. Trust & Savings Bldg., have prepared plans and will build a five-story and basement, class B apartment-building on the west side of Westlake avenue for Jas. M. Kerr.

H. G. Terrell, 1512 Paloma St., will install the plumbing and steam-heating system in the hotel building being erected at Beverly Hills for the Rodeo Land and Water Co.

Rommel & Mueller Co., 1251 S. Figueroa St., have secured the contract for plumbing and heating of the new Alhambra school building, amounting to $2,675.

J. R. Stead will install plumbing in an apartment-house on East Washington street for Charles Hooker, amounting to $3,595.

Other California News.

San Diego.—The Board of Education is planning to install 1,000 bubbling drinking-cups about the schools. Sealed bids for the sale and installation of these cups will be received until November 9th, by the Board of Education.

San Diego.—An application will soon be made to the city council by the San Diego Electric Railroad Co., for a franchise to lay steam pipes in certain streets. As soon as the franchise has been granted, pipes will be laid from the power station at the foot of E street to all buildings that wish to use steam for heating purposes.

Sacramento.—The State Board of Control, located at the state capital, has finished a thorough investigation of all state buildings in regard to their facilities for protection against loss of life by fire, and has learned that many of the buildings have inadequate fire escapes. The board is taking measures to remedy this situation and has set aside a day on which the representatives of companies handling fire-fighting and fire-escape appliances will be given an opportunity to demonstrate their lines.

Oakland.—The Park Commission has given the contract to R. H. Vant Sant for the erection of a cement comfort-station at Lakeside Park. The contract price was $2,600.

Generosity.

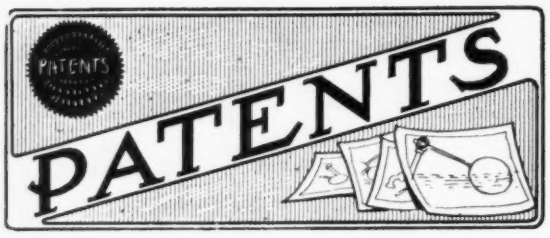
Robbie met a neighbor who was smoking some fine fragrant tobacco sent by his son in America. He took out his own pipe ostentatiously.

"Ha' you a match, Sandie?" he queried.

The match was forthcoming—but nothing more.

"I do believe," said Robbie, "I ha' left me tubacco to hame."

"Then," said Sandie, after a silence, "Ye micht as well gie me back me match."—Success.

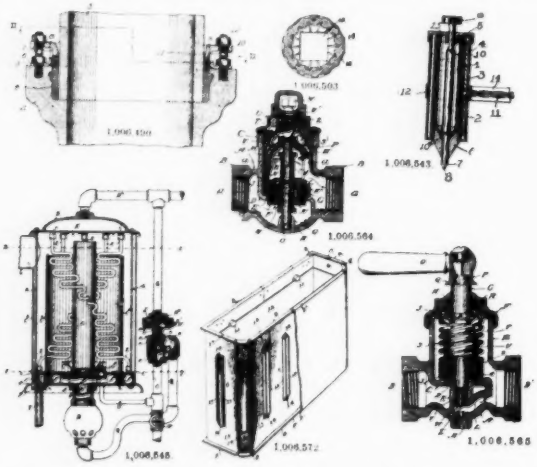


Plumbing Department.

1,006,490. Clamping Device for Pipe Joints. Raymond S. Lord, Pittsburgh, Pa. In a device of the character described, the combination of two co-operating pipe ends comprising bell and spigot members of a main packing between the walls of the members, a ring member contiguous to the end face of the bell end and provided with an annular face disposed oppositely to the outer wall of the spigot member, a packing ring interposed between the oppositely disposed wall of the ring member and pipe section, and means for forcing the packing ring home between the two opposing walls.

1,006,503. Fire Pot. Richard Rouse, jr., Newark, N. J., assignor to Boynton Furnace Co., New York, N. Y. a corporation of New Jersey. A fire pot open from top to bottom with the upper portion of the opening generally circular, the lower portion generally rectangular, and the side walls laterally and vertically convex.

1,006,543. Soldering Tool. Levi L. Funk, Chicago, Ill. A fountain soldering tool, comprising a handle, a soldering point or head, an internal reservoir connected to said head, valves at opposite ends of said reservoir for regulating the flow from said reservoir to said head and the admission of air into said reservoir, and a plunger in said reservoir carrying said valves, said valves being



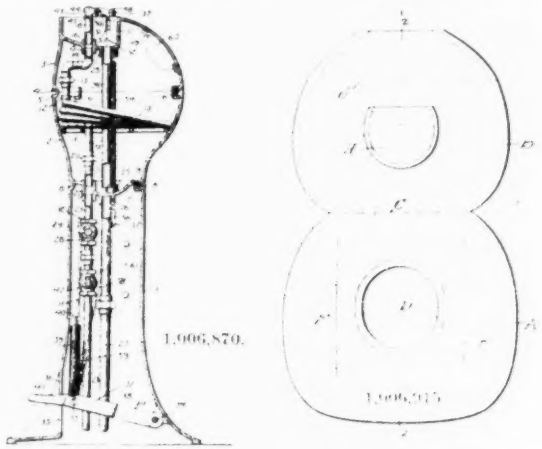
constructed and arranged to close at either extreme of movement of said plunger.

1,006,564. Valve. Samuel A. Kinsey, jr., Peoria, Ill. The combination with a valve-body provided with an open side and having a dividing diaphragm provided with a passage, of a valve-seat, a member to bear upon and hold the valve-seat upon said diaphragm and removable through said open side, a closure for the open side, a member extending through and outside the closure and adapted for adjustment from outside the valve-body and arranged to hold the first member with variable pressure upon the valve-seat, a valve having an extension at opposite sides, and guiding means above and below the diaphragm extending axially of the passage of said diaphragm to engage the extension of the valve.

1,006,545. Water Heater. Elmer E. Graham, Erie, Pa. The combination in a water-heater, of an upper hollow header, a lower hollow annular header, a cylindrical shell within said annular header and extending upward therefrom, water-tubes leading from said annular header though openings in said cylindrical shell to said upper header, and a liquid fuel burner environed by said annular header, substantially as set forth.

1,006,572. Tank. Leo Lindenberg, Columbus, O. A tank comprising a casing having top and bottom flanges, outwardly extending brace members formed from the material of the body portion of the casing, a covering for the front and sides of the casing, and having top and bottom flanges engaging the flanges of the casing, a lining for the casing, an inwardly extending projection on the casing engaging with the lining.

1,006,565. Compression and Waste Cock. Samuel A. Kinsey, jr., Peoria, Ill. In combination with a cock having a main passage and a vent-opening, of a stem having its axis of rotation substantially coincident with the axes of the passage and opening, a closure for the vent, the same being carried by the stem, a yielding member carried by the stem to receive the pressure of the closure, means to limit the pressure of the stem in moving the said closure upon the vent-opening, and a valve carried by and movable relative to the stem.



1,006,870. Drinking-Fountain. Harry Howard, Newcomb, Newton, Mass., assignor, by mesne assignments, to Cora Agnes Benneson, Cambridge, Mass. In a drinking-fountain of the class described, water supplying means comprising a pipe and a nozzle having a discharge opening for the water, means movable relatively to said nozzle to cover the discharge opening, water supply controlling means, and means first to cause relative swinging movement of said covering means and nozzle to uncover said discharge opening and then to actuate said water supply controlling means to produce a flow of water from said discharge opening.

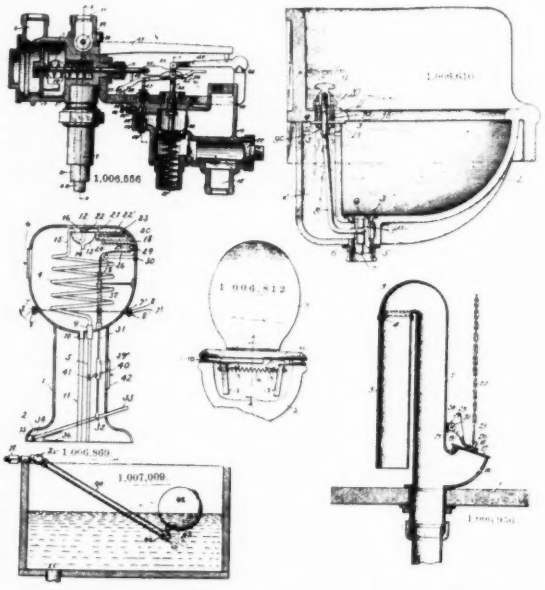
1,006,915. Seat-Cover. Ida M. Curtis, Worcester, Mass. A seat-cover for the purposes stated having a seat portion and a back portion, said back portion having a lip for engaging the lid.

1,006,556. Water-Heater. Herbert S. Humphrey, Kalamazoo, Mich. The combination with a water-heater of a burner therefor, and an automatic water inlet-valve; a fuel valve; stems for said valves; a thermostat connected to said heater; a lever actuated by said thermostat; a member pivoted on said water valve-stem and arranged to reciprocate between said lever and fuel valve-stem, said pivoted member being provided with an enlargement; a pilot; a pilot valve; a pivoted lever arranged to engage said pilot valve; and trips on said water inlet-valve stem and on said member pivoted thereto arranged to engage said pilot valve lever.

1,006,610. Lavatory-Fixture. Earl G. Watrous, Chicago, Ill. In a lavatory-fixture, the combination with a wash-basin or the like having an overflow passage and with the waste plug governing the outlet therefrom, of operating mechanism for said plug comprising an operating rod located in said passage and connected with the plug, an operating piece connected with the rod and adjustable longitudinally with respect thereto said operating piece being partially rotatable with respect to its rod, and a stop with which the operating piece is adapted to engage when rotated to a suitable extent, to hold the rod in its upper position.

1,006,869. Drinking-Fountain. Harry Howard Newcomb, Newton, Mass., assignor, by mesne assignments, to Cora Agnes Benneson, Cambridge, Mass. In a drinking fountain of the class described, water supplying means comprising a discharge opening, a cover for said discharge opening connected to a slide, a treadle, and connections intermediate said treadle and slide whereby operation of said treadle will actuate the slide to withdraw said cover from operative position.

1,006,812. Water-Closet Fixture. Thomas F. Ward, New York, N. Y. In a water-closet fixture embodying a bowl and a seat hingedly secured to said bowl, a bowl



cover comprising a frame interposed between said bowl and said seat; a plurality of door members hingedly connected with said frame; brackets extended from the under side of said door members; a spiral spring operatively connecting said brackets to lift the said door members upward to closed position; and a plurality of cam-like projections connected with said door members and extended above the same into the path of the said seat to be moved by the said seat to force the said door members to a downwardly opened position.

1,006,956. Flush-Valve. Joseph Lefrance, Montreal, Quebec, Canada. The combination of a casing forming a siphon and provided with an inlet, a valve comprising a plate 17 for controlling said inlet, a lug 18 secured to said plate, a link 19 pivotally secured to the casing and having an aperture through one end fitting over said lug 18 whereby said link is removable therefrom, the other end of said link having an inclined face adapted to contact with the casing when the plate is raised and thus limit the opening of the valve, and an operating device having a detachable connection secured to said lug 18 which serves to prevent disengagement of said link 19 from said lug 18.

1,007,009. Float-Valve. Joseph Rothchild, New York, and Henry S. Conover, Brooklyn, N. Y., assignors to The Rothchild Pressure Specialties Co., Canton, N. Y., a corporation of New York. A valve comprising a means of water supply, a discharge pipe serving as a valve-operating lever, a sleeve rotatably and slidably mounted on the discharge pipe adjacent its free end, and a float ball attached on the periphery of the sleeve.

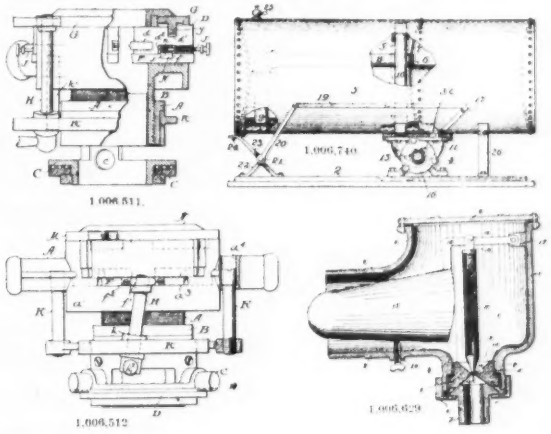
Heating Department.

1,006,511. Thread-Cutting Tool. Russell B. Tewksbury, Cleveland, O. In thread-cutting tools, the combination of a stock adapted to be rotated and moved longitudinally relative to the work, a set of cutters and a set of chaser carriers all movably mounted on the stock, the cutters being placed nearer than the chaser carriers to that end of the stock into which the work is inserted, means for adjusting the cutters, and chaser carriers for different diameters of work, and means to induce the simultaneous and equal recession of the cutters and chaser carriers while they are doing the work for which they are provided.

1,006,512. Thread-Cutting Tool. Russell B. Tewksbury, Cleveland, O. In a tool for cutting tapered threads, the combination with a stock adapted to turn and to move longitudinally relative to the work, cutters movably mounted on said stock, mechanism whereby said cutters are adapted to gradually recede as they operate on the work, and chasers adjustably mounted on said stock in position to engage the "work" after it has passed and has been tapered by said cutters.

1,006,629. Radiator Return-Valve. Solomon De Witt Chapman, Canton, O. A valve, a float tending to close the valve by sinking, a stop for the float holding the valve open when cold, and thermostatic means for closing the valve when the float is stopped.

1,006,740. Steam-Trap. Frederick C. Farnsworth, Brooklyn, N. Y. In a steam-trap, the combination of a



tank provided into two compartments and pivoted so as to tilt and in which there is a tubular passageway from the lower part of one of the compartments into the upper part of the other compartment, an inlet pipe for delivering water of condensation into the upper part of the compartment which has the passageway communicating with its lower portion, a discharge passage from the lower part of the other of the two compartments, a valve in the said discharge passage to control the discharge of water of condensation, and means actuated by the tilting of the tank for operating the valve to open or close it.

A Wide Road.

The following story about Chauncey M. Depew and a "railroad pass" is being told in railway circles. The president of the Waupaca and Nishna Railroad Company called upon Mr. Depew when he was president of the Vanderbilt system.

"What can I do for you?" Mr. Depew asked, smiling.

"I dropped in to see you, Mr. Depew, to ask for an exchange of courtesies. I am president of the Waupaca and Nishna Railroad Company. I would like to have a pass over your road, and will extend the same courtesy to yourself over my road."

Depew looked thoughtful for a minute, then he said, "Where is your road?"

"Why, it's out in Wisconsin."

"Is it rated in Poor's manual?"

"Oh, yes, indeed! We paid a nice dividend last year."

"Strange! I never heard mention of your road. How long is it?"

"We are operating sixty-seven miles this year."

"What—sixty-seven miles? And you call that an exchange of courtesy? And the Vanderbilt system has its thousands of miles?"

Depew assumed his most cavalier air as he launched that question at the head of the president of the Waupaca and Nishna, and then waited for a reply.

"Well, Mr. Depew," said the Western railroad president, as he rose to go, "your road may be a little longer than mine, but it ain't any wider!"

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WANTED—A FIRST-CLASS MAN TO work on both plumbing and heating, one who can estimate and make plans for all kinds of heating. Will pay good salary or salary and percentage. None but first-class men need apply. Give references. Address No. 720, "Domestic Engineering," Chicago. 11

WANTED, PRACTICAL SUCCESSFUL enamel mixer for cast-iron, for plant manufacturing plumbers' cast-iron enameled ware. Will also consider, in place of this, one who can mix, that has a general experience in the manufacture of sanitary ware, with a view toward taking the superintendency. Terms must be reasonable. Medium-sized shop. Give past experience, which will be held in confidence until given permission otherwise. Address No. 727, "Domestic Engineering," 445 Plymouth Court, Chicago. 11.

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FOR SALE AT A BARGAIN, 25,000 U pipe hangers, fresh stock, sizes ¾ in. to 2x6 in. long, either in whole or in lots to suit purchaser. Write for sample and price. West Penn Plating & Mfg. Co., N. S., Pittsburgh, Pa. 18

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